




CERMET CUTTING TOOLS CATALOGUE



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Ti (C,N) based cermet is a new and prospective material which not only possess the qualities of toughness, high thermal conductivity and good heat stability of metals, but also possess the qualities of high hardness, high red hardness and corrosion resistance of ceramics. The unique physical and chemical properties of cermet make it promising in the manufacturing of special cutting tools, wear parts and corrosion-resistance parts.

Advantages of cermet

High quality surface on the workpiece for finishing and semi-finishing. Turning/ milling instead of grinding can be realized;

High oxidation resistance -- High red hardness and High cutting speed in Dry cutting (Environmentally friendly);

High chemical stability -- No Built-up edge (No chemical interaction between workpiece and cutting edge);


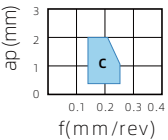

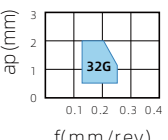

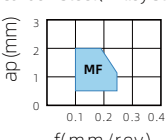

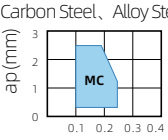

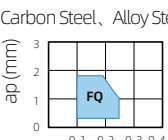

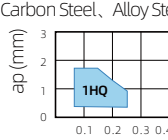

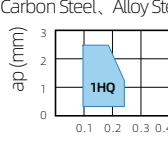
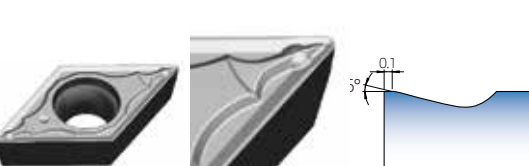
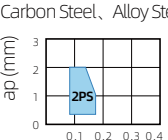
Low density -- Low cost, lightweight operation; Low cutting force -- Low noise machining;- Natural resources advantage -- less W&Co(Strategic reserve resources) needed. In the long run, raw materials are easier to obtain.

7 Cermet Grade Introduction

Grade	Density(g/cm ³)	Hardness(HRA)	Transverse Rupture Strength(MPa)	Fracture Toughness (MPa*m ^{1/2})	Workpiece	Applications	Features
MC102A	7.1	92.8	2000	8.5	Aluminium Alloy, Nonferrous Alloy, Carbon Steel	Finishing, Semi-finishing grooving	Low cutting force, high anti-adhesive, high quality roughness
MC102B	7.1	93.2	2000	8.0	Bearing Steel	ID/OD grooving, RD chamfer, sealing groove, in bearing industry	High red-hardness and wear resistance for dry cutting
MC1020	6.6	92.5	1600	9.5	HRC38	Finishing, Semi-finishing	Extraordinary wear resistance in continuous finishing machining. Provides stable finishing to machine steel, as well as gray cast iron and sintered alloy. It's a high wear resistance and high cost performance uncoated materials
MC2010	6.8	92.8	2100	9.0	HRC38	Finishing, Semi-finishing	Anti-collapse and wear resistance performance strengthened materials is utilized which can provide extra reliable roughness for extensive cutting conditions
PV1120	6.8	92.5	2200	9.0	HRC38	Finishing, Semi-finishing	Extraordinary wear resistance in continuous finishing machining with TiC/Ti(CN) coating, provides stable finishing to machine steel, as well as gray cast iron and sintered alloy. It's a high wear resistance and high cost performance coated materials
PV2110	6.8	92.8	2100	9.0	HRC38	Finishing, Semi-finishing	High lubricant performance PVD coating is used in this grade to realize the high class machining. It is a coated cermet with both high wear resistance to ensure high class surface machining in universal applications

2 Description of Chips


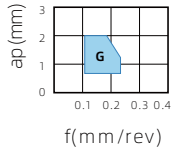

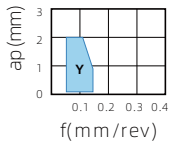

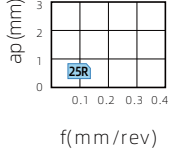

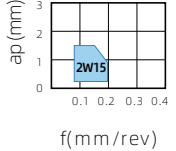

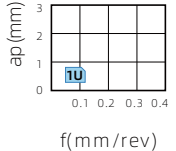
Numerous Chipbreaker for your selection

Applications	Type	Chip Type	Shape and Profile	Features	Recommended Parameters
Semifinishing Finishing	Negative	C		For finishing and semi-finishing applications. Like carbon steel or alloy steel under HRC40.	Carbon Steel, Alloy Steel 
Semifinishing	Negative	32G		Excellent cutting edge strength and chip evacuation performance. Suitable for semi-finishing applications.	Carbon Steel, Alloy Steel 
Semifinishing Finishing	Negative	MF (5VF)		Suitable for slender workpiece machining, the large rake angle reduces cutting force.	Carbon Steel, Alloy Steel 
		MC (5FS)		Suitable for machining carbon steel or alloy steel under HRC40 and oxide scale under HRC30.	Carbon Steel, Alloy Steel 
Semifinishing	Negative	FQ		Suitable for machining carbon steel or alloy steel under HRC40	Carbon Steel, Alloy Steel 
Semifinishing Finishing	Positive	1HQ		Suitable for low cutting depth applications, workpiece like carbon steel or alloy steel under HRC40.	Carbon Steel, Alloy Steel 
Semifinishing	Negative	HS		Suitable for machining carbon steel or alloy steel under HRC40 and oxide scale under HRC30.	Carbon Steel, Alloy Steel 
Semifinishing	Positive	2PS		Excellent chip evacuation performance and low cutting force. Suitable for boring machining.	Carbon Steel, Alloy Steel 

Applications	Type	Chip Type	Shape and Profile	Features	Recommended Parameters
Semifinishing Finishing	Positive	5FG		Excellent chip evacuation performance. Suitable for machining carbon steel or alloy steel under HRC40	Carbon Steel, Alloy Steel
	Negative			Suitable for machining carbon steel or alloy steel under HRC40. Recommended to use under stable cutting conditions.	Carbon Steel, Alloy Steel
Semifinishing	Positive	SMT		For semi-finishing and roughing applications. Like carbon steel or alloy steel under HRC40 and oxide scale under HRC30.	Carbon Steel, Alloy Steel
	Negative	MA		For semi-finishing and roughing applications. Like carbon steel or alloy steel under HRC40 and oxide scale under HRC30.	Carbon Steel, Alloy Steel
	Negative	SMT		For semi-finishing and roughing applications. Like carbon steel or alloy steel under HRC40 and oxide scale under HRC30.	Carbon Steel, Alloy Steel
Semifinishing Finishing	Negative	MS1 (TS)		For finishing and semi-finishing applications. Like carbon steel or alloy steel under HRC40	Carbon Steel, Alloy Steel
		FX		Low cutting force. For finishing and semi-finishing applications. Like carbon steel or alloy steel under HRC40	Carbon Steel, Alloy Steel
Semifinishing	Negative	MU		Suitable for sheet metal roughing machining and carbon steel or alloy steel under HRC40.	Carbon Steel, Alloy Steel
Semifinishing Roughing	Positive	H2		Cutting edge strengthened milling inserts, used for sidewall machining.	Carbon Steel, Alloy Steel

3 Chipbreaker












A wide variety of chip breaker

Applications	Type	Chip Type	Shape and Profile	Features	Recommended Parameters
Semifinishing	Negative	G (2G)		Applied to continuous & interrupted cutting of low-carbon steel & medium carbon steel	Carbon Steel, Alloy Steel 
Semifinishing	Positive	Y		Excellent cutting performance to get fine-finished surface	Carbon Steel, Alloy Steel 
Finish	Negative	25R		Double-edged chip breaker is beneficial to good cutting performance of viscous material like carbon steel.	Carbon Steel, Alloy Steel 
Finish	Positive	2W15		Wide cutting edge is applied to variety of cutting processing scene	Carbon Steel, Alloy Steel 
Low Feed	Positive	1U		Under low-feed condition, even cutting depth changes, cutting would be under control, make low resistance process possible.	Carbon Steel, Alloy Steel 







Applications	Type	Chip Type	Shape and Profile	Features	Recommended Parameters	
Semifinishing	Negative	2P		Excellent cutting performance of viscous material like carbon steel, under medium chip application.	Carbon Steel, Alloy Steel 	
					Carbon Steel, Alloy Steel 	
Semifinishing	Negative	C		A general chip breaker applied to ordinary cutting mode.	Carbon Steel, Alloy Steel 	
					Carbon Steel, Alloy Steel 	
	Negative	H		Parallel chip breaker is good at medium & low feed cutting mode.	Carbon Steel, Alloy Steel 	
					Carbon Steel, Alloy Steel 	
	Finish	Positive	S (S1)		Effectively control cutting & outstanding cutting performance under low-resistance condition.	Carbon Steel, Alloy Steel
						Carbon Steel, Alloy Steel
Negative		3F (F, F1)		Sharp cutting edge enable excellent cutting performance, while significantly lower cutting resistance, and effectively control cutting to make sure smooth chip removal	Carbon Steel, Alloy Steel 	
					Carbon Steel, Alloy Steel 	
Positive	4W		Wide cutting edge chip breaker is suitable to variety of finish applications.	Carbon Steel, Alloy Steel 		

4 Purchasing Code













Negative inserts

Appearance	Type	Size(mm)			Grade	
		I.C	S	Re	MC2010	PV2110
	CNMG120404-FQ	12.7	4.76	0.4	●	●
	CNMG120408-FQ	12.7	4.76	0.8	●	●
	DNMG150404-FQ	12.7	4.76	0.4	●	●
	DNMG150408-FQ	12.7	4.76	0.8	●	●
	DNMG150604-FQ	12.7	6.35	0.4	●	●
	DNMG150608-FQ	12.7	6.35	0.8	●	●
	SNMG120404-FQ	12.7	4.76	0.4	●	●
	SNMG120408-FQ	12.7	4.76	0.8	●	●
	TNMG160404-FQ	9.525	4.76	0.4	●	●
	TNMG160408-FQ	9.525	4.76	0.8	●	●
	VNMG160404-FQ	9.525	4.76	0.4	●	●
	VNMG160408-FQ	9.525	4.76	0.8	●	●
	WNMG080404-FQ	12.7	4.76	0.4	●	●
	WNMG080408-FQ	12.7	4.76	0.8	●	●
	WNMG080412-FQ	12.7	4.76	1.2	●	●
	CNMG120404-FX	12.7	4.76	0.4	●	●
	CNMG120408-FX	12.7	4.76	0.8	●	●
	SNMG120404-FX	12.7	4.76	0.4	●	●
	SNMG120408-FX	12.7	4.76	0.8	●	●
	TNMG160404-FX	9.525	4.76	0.4	●	●
	TNMG160408-FX	9.525	4.76	0.8	●	●
	WNMG080404-FX	12.7	4.76	0.4	●	●
	WNMG080408-FX	12.7	4.76	0.8	●	●
	WNMG080404-HS	12.7	4.76	0.4	●	●
	WNMG080408-HS	12.7	4.76	0.8	●	●



Negative inserts

Appearance	Type	Size(mm)			Grade	
		LC	S	Re	MC2010	PV2110
	DNMG150404R/L-MF	12.7	4.76	0.4	●	●
	TNMG160404R/L-MF	9.525	4.76	0.4	●	●
	TNMG160408R/L-MF	9.525	4.76	0.8	●	●
	TNMG160404R/L-5VF	9.525	4.76	0.4	●	●
	TNMG160408R/L-5VF	9.525	4.76	0.8	●	●
	TNMG160404R-MC1	9.525	4.76	0.4	●	●
	TNMG160408R-MC1	9.525	4.76	0.8	●	●
	SNMG120404-5MT	12.7	4.76	0.4	●	●
	SNMG120408-5MT	12.7	4.76	0.8	●	●
	SNMG120408-MA	12.7	4.76	0.8	●	●
	TNMG160404-5MT	9.525	4.76	0.4	●	●
	TNMG160404-MA	9.525	4.76	0.4	●	●
	TNMG160408-MA	9.525	4.76	0.8	●	●
	VNMG160404-5MT	9.525	4.76	0.4	●	●
	VNMG160408-MA	9.525	4.76	0.8	●	●
	WNMG080404-5MT	12.7	4.76	0.4	●	●
	WNMG080408-5MT	12.7	4.76	0.8	●	●
	TNMG160404-5FG	9.525	4.76	0.4	●	●
	TNMG160408-5FG	9.525	4.76	0.8	●	●
	WNMG080404-5FG	12.7	4.76	0.4	●	●
	WNMG080408-5FG	12.7	4.76	0.8	●	●
	TNMG160404R/L-5FS	9.525	4.76	0.4	●	●
	TNMG160408R/L-5FS	9.525	4.76	0.8	●	●





Negative inserts

Appearance	Type	Size(mm)			Grade	
		I.C	S	Re	MC2010	PV2110
	CNMG120404-MS1	12.7	4.76	0.4	●	●
	CNMG120408-MS1	12.7	4.76	0.8	●	●
	TNMG160404-MS1	9.525	4.76	0.4	●	●
	TNMG160408-MS1	9.525	4.76	0.8	●	●
	WNMG080404-MS1	12.7	4.76	0.4	●	●
	WNMG080408-MS1	12.7	4.76	0.8	●	●
	TNMG160404-2TS	9.525	4.76	0.4	●	●
	TNMG160408-2TS	9.525	4.76	0.8	●	●
	WNMG080404-2TS	12.7	4.76	0.4	●	●
	WNMG080408-2TS	12.7	4.76	0.8	●	●
	TNMG160404R/L-MC	9.525	4.76	0.4	●	●
	TNMG160408R/L-MC	9.525	4.76	0.8	●	●
	WNMG080404R/L-MC	12.7	4.76	0.4	●	●
	WNMG080408R/L-MC	12.7	4.76	0.8	●	●
	CNMG120404-MU	12.7	4.76	0.4	●	●
	CNMG120408-MU	12.7	4.76	0.8	●	●
	DNMG150404-MU	12.7	4.76	0.4	●	●
	DNMG150408-MU	12.7	4.76	0.8	●	●
	DNMG150604-MU	12.7	6.35	0.4	●	●
	DNMG150608-MU	12.7	6.35	0.8	●	●
	TNMG160404-MU	9.525	4.76	0.4	●	●
	TNMG160408-MU	9.525	4.76	0.8	●	●
	VNMG160404-MU	9.525	4.76	0.4	●	●
	VNMG160408-MU	9.525	4.76	0.8	●	●
	WNMG080404-MU	12.7	4.76	0.4	●	●
	WNMG080408-MU	12.7	4.76	0.8	●	●








Negative inserts

Appearance	Type	Size(mm)			Grade	
		I.C	S	Re	MC2010	PV2110
	TNMG160402R/L-C	9.525	4.76	0.2	●	●
	TNMG160404R/L-C	9.525	4.76	0.4	●	●
	TNMG160408R/L-C	9.525	4.76	0.8	●	●
	TNMG160404R/L-32G	9.525	4.76	0.4	●	●
	TNMG160408R/L-32G	9.525	4.76	0.8	●	●



Positive Inserts




Appearance	Type	Size(mm)			Grade	
		I.C	S	Re	MC2010	PV2110
	CCMT060202-1HQ	6.35	2.38	0.2	●	●
	CCMT060204-1HQ	6.35	2.38	0.4	●	●
	CCMT09T302-1HQ	9.525	3.97	0.2	●	●
	CCMT09T304-1HQ	9.525	3.97	0.4	●	●
	CCMT09T304-3MU	9.525	3.97	0.4	●	●
	DCMT070202-1HQ	6.35	2.38	0.2	●	●
	DCMT070204-1HQ	6.35	2.38	0.4	●	●
	DCMT11T302-1HQ	9.525	3.97	0.2	●	●
	DCMT11T304-1HQ	9.525	3.97	0.4	●	●
	DCMT11T308-1HQ	9.525	3.97	0.8	●	●
	DCMT11T304-2PS	9.525	3.97	0.4	●	●



Positive Inserts

Appearance	Type	Size(mm)			Grade	
		I.C	S	Re	MC2010	PV2110
	TCMT090202-1HQ	5.56	2.38	0.2	●	●
	TCMT090204-1HQ	5.56	2.38	0.4	●	●
	TCMT110202-1HQ	6.35	2.38	0.2	●	●
	TCMT110204-1HQ	6.35	2.38	0.4	●	●
	TCMT110208-1HQ	6.35	2.38	0.8	●	●
	TPMT110304-1HQ	6.35	3.18	0.4	●	●
	TPMT110308-1HQ	6.35	3.18	0.8	●	●
	TCMT16T304-1HQ	9.525	3.97	0.4	●	●
	VBMT110304-1HQ	6.35	3.18	0.4	●	●
	VBMT160404-1HQ	9.525	4.76	0.4	●	●
	CCMT060204-5FG	6.35	2.38	0.4	●	●
	CCMT09T304-5FG	9.525	3.97	0.4	●	●
	CCMT09T308-5FG	9.525	3.97	0.8	●	●
	DCMT070204-5FG	6.35	2.38	0.4	●	●
	DCMT11T304-5FG	9.525	3.97	0.4	●	●
	DCMT11T308-5FG	9.525	3.97	0.8	●	●
	TCMT110204-5FG	6.35	2.38	0.4	●	●
	TCMT16T304-5FG	9.525	3.97	0.4	●	●
	TPMT110304-5FG	6.35	3.18	0.4	●	●
	CCMT060204-5MT	6.35	2.38	0.4	●	●
	CCMT09T304-5MT	9.525	3.97	0.4	●	●
	CCMT09T308-5MT	9.525	3.97	0.8	●	●
	DCMT11T304-5MT	9.525	3.97	0.4	●	●
	DCMT11T308-5MT	9.525	3.97	0.8	●	●

Positive Inserts




Appearance	Type	Size(mm)			Grade	
		I.C	S	Re	MC2010	PV2110
	SCMT09T304-5MT	9.525	3.97	0.4	●	●
	SCMT09T308-5MT	9.525	3.97	0.8	●	●
	TCMT110204-5MT	6.35	2.38	0.4	●	●
	TCMT16T304-5MT	9.525	3.97	0.4	●	●
	TCMT16T308-5MT	9.525	3.97	0.8	●	●

Appearance	Type	Size(mm)				Grade	
		L	W	H	Re	MC2010	PV2110
	APMT1135PDER-H2	11	6.35	3.5	0.8	●	●
	APMT1604PDER-H2	16.5	9.525	4.76	0.8	●	●
	APMT1604PDER-FM	16.5	9.525	4.76	0.8	●	●
	MGMN200-02-G	16	2.0	3.5	0.2	●	●
	MGMN250-02-G	18.5	2.5	3.85	0.2	●	●
	MGMN300-03-G	21.0	3.0	4.80	0.3	●	●
	MGMN400-03-G	21.0	4.0	4.80	0.3	●	●







Appearance	Type	Size(mm)		Grade	
		I.C	H	MC2010	PV2110
	RCKT1204MO-PM	12.0	4.76	●	●
	RPMT1203-BB	12.0	3.18	●	●
	RPMT1604-BB	16.0	4.76	●	●
	RCKT0803MO-BB	8.0	3.18	●	●

5 Purchasing Code




Grounded Positive Inserts

Appearance	Type	Size(mm)			Grade	
		I.C	S	Re	MC1020	PV1120
	CCGT060202R/L-C	6.35	2.38	0.2	●	●
	CCGT060204R/L-C	6.35	2.38	0.4	●	●
	CCGT09T302R/L-C	9.525	3.97	0.2	●	●
	CCGT09T304R/L-C	9.525	3.97	0.4	●	●
	CCGT09T320R/L-C	9.525	3.97	2.0	●	●
	CCGT040101R/L-S	4.3	1.8	0.1	●	●
	CCGT040102R/L-S	4.3	1.8	0.2	●	●
	CCGT040104R/L-S	4.3	1.8	0.4	●	●
	CCGT060202R/L-S1	6.35	2.38	0.2	●	●
	CCGT060204R/L-S1	6.35	2.38	0.4	●	●
	CCGT09T302R/L-S1	9.525	3.97	0.2	●	●
	CCGT09T304R/L-S1	9.525	3.97	0.4	●	●
	CCGT060201ER/L-1U	6.35	2.38	0.1	●	●
	CCGT060202FR/L-1U	6.35	2.38	0.2	●	●
	CCGT060204FR/L-1U	6.35	2.38	0.4	●	●
	CCGT060202ER/L-1U	6.35	2.38	0.2	●	●
	CCGT060204ER/L-1U	6.35	2.38	0.4	●	●
	CCGT09T302R/L-1U	9.525	3.97	0.2	●	●
	CCGT09T304R/L-1U	9.525	3.97	0.4	●	●
	CCGT09T301FR/L-1U	9.525	3.97	0.1	●	●
	CCGT09T301R/L-1U	9.525	3.97	0.1	●	●
	CCGT09T302FR/L-1U	9.525	3.97	0.2	●	●
	CCGT09T304FR/L-1U	9.525	3.97	0.4	●	●
		CCGT09T301R/L-2W20	9.525	3.97	0.1	●







Grounded Positive Inserts

Appearance	Type	Size(mm)			Grade	
		I.C	S	Re	MC1020	PV1120
	CCGT060200R/L-H	6.35	2.38	0	●	●
	CCGT060202R/L-H	6.35	2.38	0.2	●	●
	CCGT060204R/L-H	6.35	2.38	0.4	●	●
	CCGT09T300R/L-H	9.525	3.97	0	●	●
	CCGT09T302R/L-H	9.525	3.97	0.2	●	●
	CCGT09T304R/L-H	9.525	3.97	0.4	●	●
	DCGT070202R/L-C	6.35	2.38	0.2	●	●
	DCGT070204R/L-C	6.35	2.38	0.4	●	●
	DCGT11T301R/L-C	9.525	3.97	0.1	●	●
	DCGT11T302R/L-C	9.525	3.97	0.2	●	●
	DCGT11T304R/L-C	9.525	3.97	0.4	●	●
	DCGT11T301R/L-S	9.525	3.97	0.1	●	●
	DCGT070201R/L-S1	6.35	2.38	0.1	●	●
	DCGT070202R/L-S1	6.35	2.38	0.2	●	●
	DCGT070204R/L-S1	6.35	2.38	0.4	●	●
	DCGT11T302R/L-S1	9.525	3.97	0.2	●	●
	DCGT11T304R/L-S1	9.525	3.97	0.4	●	●
	DCGT11T302R/L-H	9.525	3.97	0.2	●	●
	DCGT11T304R/L-H	9.525	3.97	0.4	●	●
	DCGT11T308R/L-H	9.525	3.97	0.8	●	●
	DCGT11T301FR/L-1U	9.525	3.97	0.1	●	●
	DCGT11T302FR/L-1U	9.525	3.97	0.2	●	●
	DCGT11T304FR/L-1U	9.525	3.97	0.4	●	●
	TBGH060102R/L-S1	3.97	1.59	0.2	●	●
	TBGH060104R/L-S1	3.97	1.59	0.4	●	●
	TPGH080202R/L-S1	4.76	2.38	0.2	●	●
	TPGH080204R/L-S1	4.76	2.38	0.4	●	●
	TPGH090202R/L-S1	5.56	2.38	0.2	●	●





Grounded Positive Inserts

Appearance	Type	Size(mm)			Grade	
		I.C	S	Re	MC1020	PV1120
	TPGH090204R/L-S1	5.56	2.38	0.4	●	●
	TPGH110302R/L-S1	6.35	3.18	0.2	●	●
	TPGH110304R/L-S1	6.35	3.18	0.4	●	●
	TPGH080201R/L-S	4.76	2.38	0.1	●	●
	TPGH080208R/L-S	4.76	2.38	0.8	●	●
	TPGH090201R/L-S	5.56	2.38	0.1	●	●
	TPGH090208R/L-S	5.56	2.38	0.8	●	●
	TPGH110301R/L-S	6.35	3.18	0.1	●	●
	TPGH110308R/L-S	6.35	3.18	0.8	●	●
	TBGT060102R/L-4W	3.97	1.59	0.2	●	●
	TBGT060104R/L-4W	3.97	1.59	0.4	●	●
	TPGT080202R/L-4W	4.76	2.38	0.2	●	●
	TPGT080204R/L-4W	4.76	2.38	0.4	●	●
	TPGT090202R/L-4W	5.56	2.38	0.2	●	●
	TPGT090204R/L-4W	5.56	2.38	0.4	●	●
	TCGT110202R/L-4W	6.35	2.38	0.2	●	●
	TCGT110204R/L-4W	6.35	2.38	0.4	●	●
	TPGT110302R/L-4W	6.35	3.18	0.2	●	●
	TPGT110304R/L-4W	6.35	3.18	0.4	●	●
	TBGT060102R/L-S1	3.97	1.59	0.2	●	●
	TBGT060104R/L-S1	3.97	1.59	0.4	●	●
	TPGT080202R/L-S1	4.76	2.38	0.2	●	●
	TPGT080204R/L-S1	4.76	2.38	0.4	●	●
	TPGT090202R/L-S1	5.56	2.38	0.2	●	●
	TPGT090204R/L-S1	5.56	2.38	0.4	●	●
	TCGT110202R/L-S1	6.35	2.38	0.2	●	●
	TCGT110204R/L-S1	6.35	2.38	0.4	●	●








Grounded Positive Inserts

Appearance	Type	Size(mm)			Grade	
		I.C	S	Re	MC1020	PV1120
	TPGT110302R/L-S1	6.35	3.18	0.2	●	●
	TPGT110304R/L-S1	6.35	3.18	0.4	●	●
	TCGT110201R/L-S	6.35	2.38	0.1	●	●
	TCGT110208R/L-S	6.35	2.38	0.8	●	●
	TCGT110202R/L-C	6.35	2.38	0.2	●	●
	TCGT110204R/L-C	6.35	2.38	0.4	●	●
	TPGH110302R/L-2W15	6.35	3.18	0.2	●	●
	TPGH110304R/L-2W15	6.35	3.18	0.4	●	●
	VCGT110301R/L-S	6.35	3.18	0.1	●	●
	VCGT110302R/L-S	6.35	3.18	0.2	●	●
	VCGT110304R/L-S	6.35	3.18	0.4	●	●
	VCGT110308R/L-S	6.35	3.18	0.8	●	●
	VBGT110301R/L-S1	6.35	3.18	0.1	●	●
	VBGT110302R/L-S1	6.35	3.18	0.2	●	●
	VBGT110304R/L-S1	6.35	3.18	0.4	●	●
	VBGT160402R/L-S1	9.525	4.76	0.2	●	●
	VBGT160404R/L-S1	9.525	4.76	0.4	●	●
	VBGT160408R/L-S1	9.525	4.76	0.8	●	●
	VCGT160402R/L-S1	9.525	4.76	0.2	●	●
	VCGT160404R/L-S1	9.525	4.76	0.4	●	●
	VCGT160408R/L-S1	9.525	4.76	0.8	●	●
	VBGT110301R/L-Y	6.35	3.18	0.1	●	●
	VBGT110302R/L-Y	6.35	3.18	0.2	●	●
	VBGT110304R/L-Y	6.35	3.18	0.4	●	●
	VBGT160402R/L-Y	9.525	4.76	0.2	●	●
	VBGT160404R/L-Y	9.525	4.76	0.4	●	●
	VBGT160408R/L-Y	9.525	4.76	0.8	●	●

Grounded Positive Inserts

Appearance	Type	Size(mm)			Grade	
		I.C	S	Re	MC1020	PV1120
	VBGT110302R/L-C	6.35	3.18	0.2	●	●
	VBGT110304R/L-C	6.35	3.18	0.4	●	●
	VCGT110301R/L-C	6.35	3.18	0.1	●	●
	VCGT110302R/L-C	6.35	3.18	0.2	●	●
	VCGT110304R/L-C	6.35	3.18	0.4	●	●
	VBGT160402R/L-C	9.525	4.76	0.2	●	●
	VBGT160404R/L-C	9.525	4.76	0.4	●	●
	VBGT160408R/L-C	9.525	4.76	0.8	●	●
	VCGT160402R/L-C	9.525	4.76	0.2	●	●
	VCGT160404R/L-C	9.525	4.76	0.4	●	●
	VCGT160408R/L-C	9.525	4.76	0.8	●	●
		VBGT110301FR/L-P1	6.35	3.18	0.1	●
VBGT110302FR/L-P1		6.35	3.18	0.2	●	●
VBGT110304FR/L-P1		6.35	3.18	0.4	●	●
VBGT160402R/L-P		9.525	4.76	0.2	●	●
VBGT160404R/L-P		9.525	4.76	0.4	●	●
VBGT160408R/L-P		9.525	4.76	0.8	●	●
VCGT160402R/L-P		9.525	4.76	0.2	●	●
VCGT160404R/L-P		9.525	4.76	0.4	●	●
VCGT160408R/L-P		9.525	4.76	0.8	●	●
	VBGT160402R/L-H	9.525	4.76	0.2	●	●
	VBGT160404R/L-H	9.525	4.76	0.4	●	●
	VBGT160408R/L-H	9.525	4.76	0.8	●	●
	WBGT060102R/L-S1	3.97	1.59	0.2	●	●
	WBGT060104R/L-S1	3.97	1.59	0.4	●	●









Grounded Negative Inserts

Appearance	Type	Size(mm)			Grade	
		I.C	S	Re	MC1020	PV1120
	CNGG120402R/L-C	12.7	4.76	0.2	●	●
	CNGG120404R/L-C	12.7	4.76	0.4	●	●
	CNGG120408R/L-C	12.7	4.76	0.8	●	●
	CNGG120402R/L-H	12.7	4.76	0.2	●	●
	CNGG120404R/L-H	12.7	4.76	0.4	●	●
	CNGG120408R/L-H	12.7	4.76	0.8	●	●
	CNGG120402R/L-P	12.7	4.76	0.2	●	●
	CNGG120404R/L-P	12.7	4.76	0.4	●	●
	CNGG120408R/L-P	12.7	4.76	0.8	●	●
	CNGG120402R/L-S1	12.7	4.76	0.2	●	●
	CNGG120404R/L-S1	12.7	4.76	0.4	●	●
	CNGG120408R/L-S1	12.7	4.76	0.8	●	●
	DNGG110402R/L-C	9.525	4.76	0.2	●	●
	DNGG110404R/L-C	9.525	4.76	0.4	●	●
	DNGG110408R/L-C	9.525	4.76	0.8	●	●
	DNGG110402R/L-H	9.525	4.76	0.2	●	●
	DNGG110404R/L-H	9.525	4.76	0.4	●	●
	DNGG110408R/L-H	9.525	4.76	0.8	●	●
	DNGG150402R/L-H	12.7	4.76	0.2	●	●
	DNGG150404R/L-H	12.7	4.76	0.4	●	●
	DNGG150408R/L-H	12.7	4.76	0.8	●	●
	DNGG110402R/L-S	9.525	4.76	0.2	●	●
	DNGG110404R/L-S	9.525	4.76	0.4	●	●
	DNGG110408R/L-S	9.525	4.76	0.8	●	●
	DNGG150402R/L-S	12.7	4.76	0.2	●	●
	DNGG150404R/L-S	12.7	4.76	0.4	●	●
	DNGG150408R/L-S	12.7	4.76	0.8	●	●



Grounded Negative Inserts


Appearance	Type	Size(mm)			Grade	
		I.C	S	Re	MC1020	PV1120
	DNKG150402R/L-S1	12.7	4.76	0.2	●	●
	DNKG150404R/L-S1	12.7	4.76	0.4	●	●
	DNKG150408R/L-S1	12.7	4.76	0.8	●	●
	SNKG090302R/L-P	9.525	3.18	0.2	●	●
	SNKG090304R/L-P	9.525	3.18	0.4	●	●
	SNKG090308R/L-P	9.525	3.18	0.8	●	●
	SNKG120402R/L-P	12.7	4.76	0.2	●	●
	SNKG120404R/L-P	12.7	4.76	0.4	●	●
	SNKG120408R/L-P	12.7	4.76	0.8	●	●
	SNKG120420R/L-2G	12.7	4.76	2.0	●	●
	SNKG120425R/L-2G	12.7	4.76	2.5	●	●
	SNKG090302R/L-C	9.525	3.18	0.2	●	●
	SNKG090304R/L-C	9.525	3.18	0.4	●	●
	SNKG090308R/L-C	9.525	3.18	0.8	●	●
	SNKG120402R/L-C	12.7	4.76	0.2	●	●
	SNKG120404R/L-C	12.7	4.76	0.4	●	●
	SNKG120408R/L-C	12.7	4.76	0.8	●	●
	SNKG120412R/L-C	12.7	4.76	1.2	●	●
	TNKG160401R/L-2P	9.525	4.76	0.1	●	●
	TNKG160402R/L-2P	9.525	4.76	0.2	●	●
	TNKG160404R/L-2P	9.525	4.76	0.4	●	●
	TNKG160408R/L-2P	9.525	4.76	0.8	●	●
	TNKG160401R/L-C	9.525	4.76	0.1	●	●
	TNKG160402R/L-C	9.525	4.76	0.2	●	●
	TNKG160404R/L-C	9.525	4.76	0.4	●	●
	TNKG160408R/L-C	9.525	4.76	0.8	●	●
	TNKG220402R/L-C	12.7	4.76	0.2	●	●

Grounded Negative Inserts

Appearance	Type	Size(mm)			Grade	
		I.C	S	Re	MC1020	PV1120
	TNGG220404R/L-C	12.7	4.76	0.4	●	●
	TNGG220408R/L-C	12.7	4.76	0.8	●	●
	TNGG160401R/L-F	9.525	4.76	0.1	●	●
	TNGG160402R/L-F1	9.525	4.76	0.2	●	●
	TNGG160404R/L-F1	9.525	4.76	0.4	●	●
	TNGG160408R/L-F1	9.525	4.76	0.8	●	●
	TNGG160401R/L-2W	9.525	4.76	0.1	●	●
	TNGG160402R/L-2W	9.525	4.76	0.2	●	●
	TNGG160404R/L-2W	9.525	4.76	0.4	●	●
	TNGG160408R/L-2W	9.525	4.76	0.8	●	●
	TNGG160402R/L-3F	9.525	4.76	0.2	●	●
	TNGG160404R/L-3F	9.525	4.76	0.4	●	●
	TNGG160408R/L-3F	9.525	4.76	0.8	●	●
	TNGG160402R/L-25R	9.525	4.76	0.2	●	●
	TNGG160404R/L-25R	9.525	4.76	0.4	●	●
	VN GG160402R/L-C	9.525	4.76	0.2	●	●
	VN GG160404R/L-C	9.525	4.76	0.4	●	●
	VN GG160408R/L-C	9.525	4.76	0.8	●	●
	VN GG160402R/L-H	9.525	4.76	0.2	●	●
	VN GG160404R/L-H	9.525	4.76	0.4	●	●
	VN GG160408R/L-H	9.525	4.76	0.8	●	●
	VN GG160402R/L-S	9.525	4.76	0.2	●	●
	VN GG160404R/L-S	9.525	4.76	0.4	●	●
	VN GG160408R/L-S	9.525	4.76	0.8	●	●
	VN GG160402R/L-S1	9.525	4.76	0.2	●	●
	VN GG160404R/L-S1	9.525	4.76	0.4	●	●
	VN GG160408R/L-S1	9.525	4.76	0.8	●	●

Grounded Negative Inserts

Appearance	Type	Size(mm)			Grade	
		I.C	S	Re	MC1020	PV1120
	WNGG060402R/L-C	9.525	4.76	0.2	●	●
	WNGG060404R/L-C	9.525	4.76	0.4	●	●
	WNGG060408R/L-C	9.525	4.76	0.8	●	●
	WNGG080402R/L-C	12.7	4.76	0.2	●	●
	WNGG080404R/L-C	12.7	4.76	0.4	●	●
	WNGG080408R/L-C	12.7	4.76	0.8	●	●
	WNGG060402R/L-S	9.525	4.76	0.2	●	●
	WNGG060404R/L-S	9.525	4.76	0.4	●	●
	WNGG060408R/L-S	9.525	4.76	0.8	●	●
	WNGG060402R/L-S1	9.525	4.76	0.2	●	●
	WNGG060404R/L-S1	9.525	4.76	0.4	●	●
	WNGG060408R/L-S1	9.525	4.76	0.8	●	●
	WNGG080402R/L-S	12.7	4.76	0.2	●	●
	WNGG080404R/L-S	12.7	4.76	0.4	●	●
	WNGG080408R/L-S	12.7	4.76	0.8	●	●
	WNGG080402R/L-S1	12.7	4.76	0.2	●	●
	WNGG080404R/L-S1	12.7	4.76	0.4	●	●
	WNGG080408R/L-S1	12.7	4.76	0.8	●	●

Appearance	Type	Size(mm)				Grade	
		L	W	H	Re	MC2010	PV1120
	TGF32R200-010	9.525	3.18	2.0	0.1	●	●

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