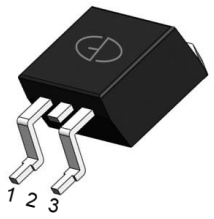
N-Channel 40V (D-S) Power MOSFET

Features

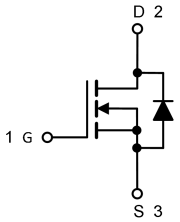
- 100% Avalanche Tested
- Extremely Low Losses with Low FOM Rdson*Qg
- Halogen Free, Pb-Free
- RoHS Compliant



TO-263AB (D^2PAK)

Applications

- DC/DC
- Motors, lamps
- Power switching



Absolute Maximum Ratings (T_J=25°C unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain Source Voltage		V_{DS}	60	V
Gate Source Voltage		V_{GS}	±20	V
Drain Current, Continuous V_{GS}=10V *(Note 1)*	T_C=25°C	I_D	80	A
Drain Current, Pulsed *(Note 2)*		I_{DM}	320	A
Single Avalanche Energy		E_{AS}	410	mJ
Power Dissipation *(Note 3)*	T_C=25°C	P_D	108	W
Operating Junction/ Storage Temperature Range		T_J/ T_{STG}	-55 to +150	°C

Note 1: Calculated continuous current based on maximum allowable junction temperature.
Note 2: Repetitive rating; pulse width limited by max. junction temperature.

Thermal Characteristics

Parameter	Symbol	Max	Unit
Thermal Resistance Junction to Case *(Note 3)*	R_{thJC}	1.4	°C/W

Note 3: The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.

Electrical Characteristics (T_J =25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	60	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V	--	--	1	uA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_{DS}=250uA	2	--	4	V
Gate Leakage Current	I_{GSS}	V_{GS}=±10V, V_{DS}=0V	--	--	±100	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=30A	--	5.8	8	mΩ
Total Gate Charge	Q_g	I_D = 30A, V_{DS}=30V, V_{GS} = 15V	--	71.2	--	nC
Gate Source Charge	Q_{gs}		--	16.4	--	
Gate Drain Charge	Q_{gd}		--	23.3	--	
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DS}=30V, R_{GEN}=3Ω, I_D = 30A	--	18.8	--	ns
Turn-on Rise Time	t_r		--	11.8	--	
Turn-off Delay Time	$t_{d(off)}$		--	107.3	--	
Turn-off Fall Time	t_f		--	58.4	--	
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=50V, f=1MHz	--	3934	--	pF
Output Capacitance	C_{oss}		--	209	--	
Reverse Transfer Capacitance	C_{rss}		--	191	--	

Reverse Diode Characteristics (T_J =25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Continuous Source Current (Body Diode)	I_S	T_C=25°C	--	--	80	A
Pulsed Source Current (Body Diode)	I_{SM}		--	--	320	
Diode Forward Voltage	V_{SD}	I_S=30A, V_{GS}=0V	--	0.89	1.2	V
Reverse Recovery Time	T_{rr}	I_F =30A, di/dt = 100 A/μs	--	31.4	--	ns
Reverse Recovery Charge	Q_{rr}		--	31.1	--	nC

Typical Characteristics Curves (T_J = 25℃ unless otherwise noted)

Fig.1 - Typical Output Characteristics

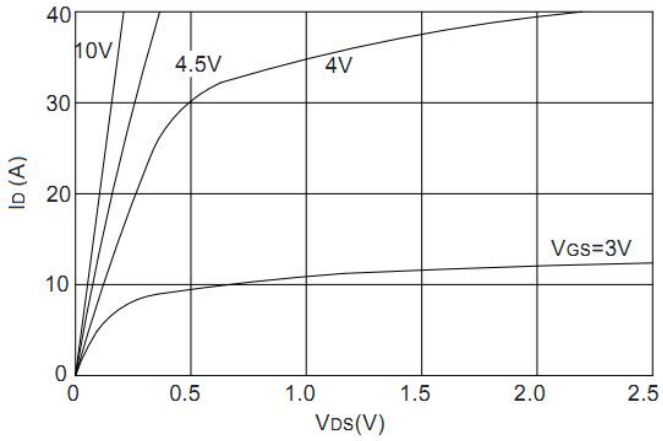


Fig.2 - Transfer Characteristics

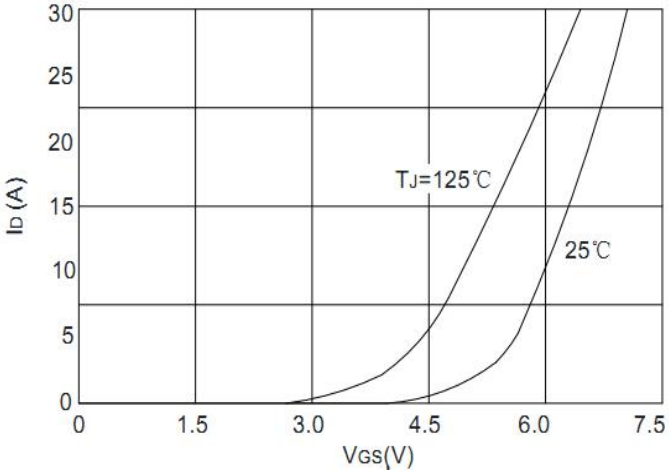


Fig.3 - Gate to Source Cut-off Voltage

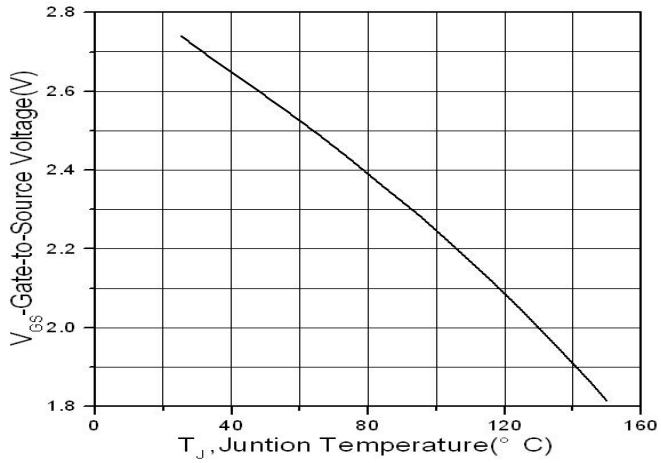


Fig.4 - Body Diode Characteristics

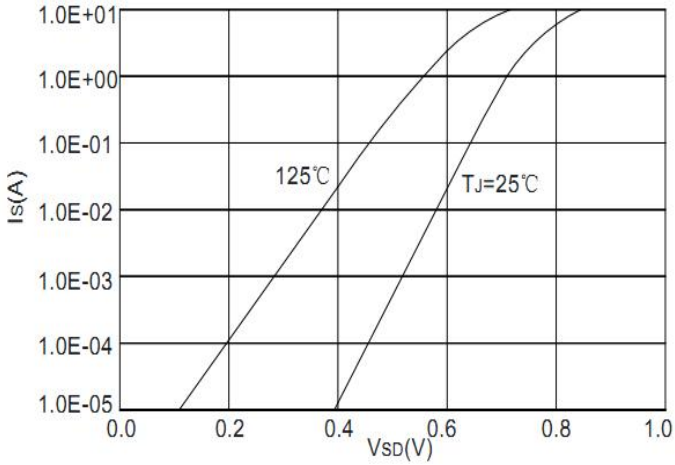


Fig.5 - Gate Charge

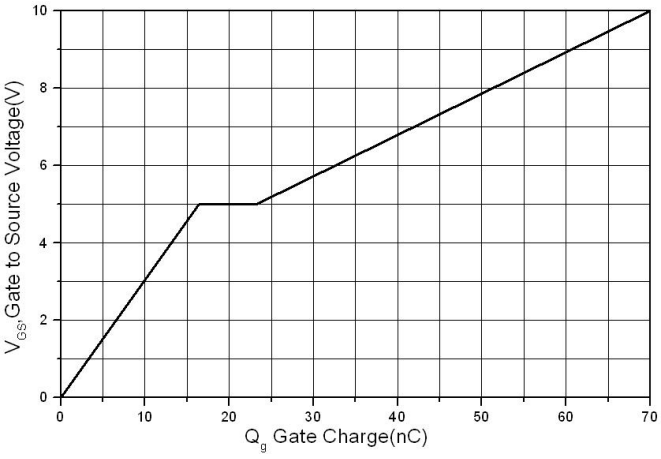
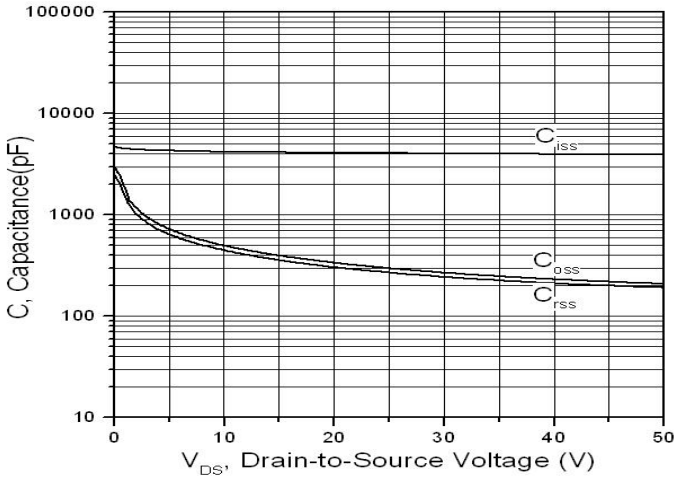


Fig.6 - Capacitance



Typical Characteristics Curves (T_J = 25℃ unless otherwise noted)

Fig.7 - Drain-to-Source Breakdown Voltage vs. Temperature

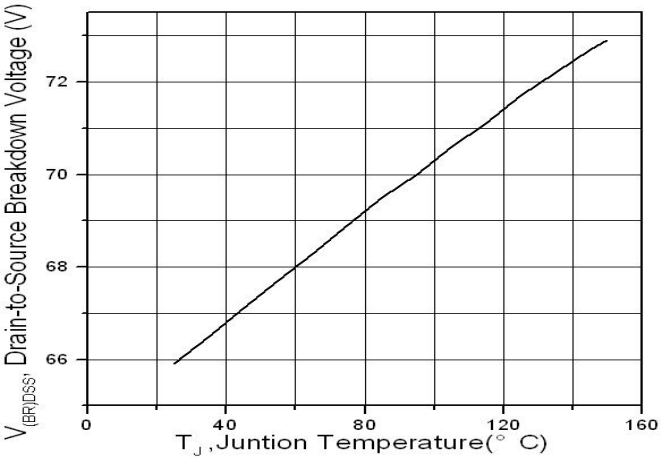


Fig.8 - Normalized On-Resistance vs. Junction Temperature

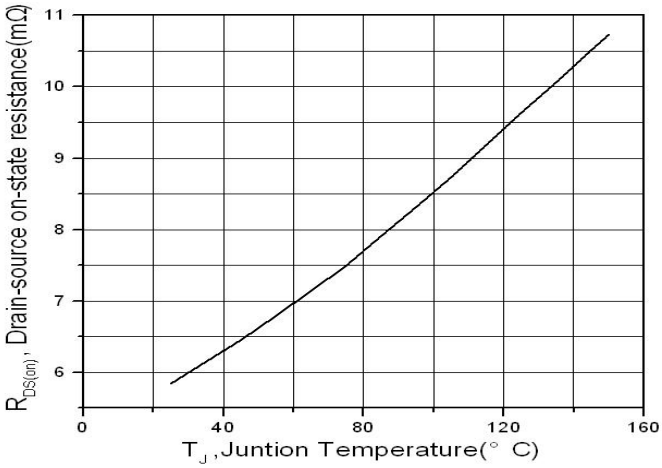


Fig.9 - Safe Operating Area

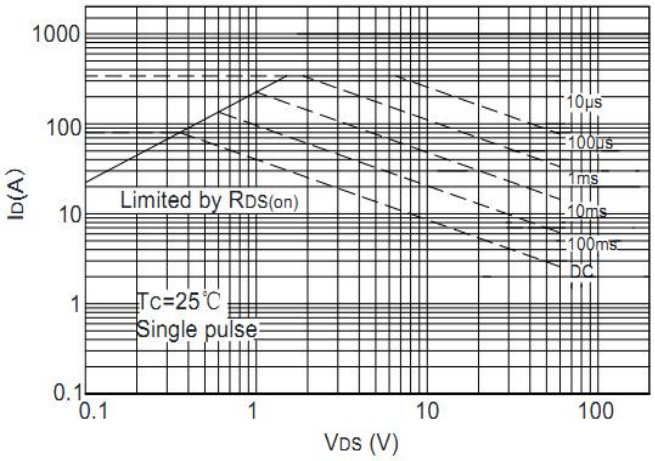


Fig.10 - Drain Current vs. Case Temperature

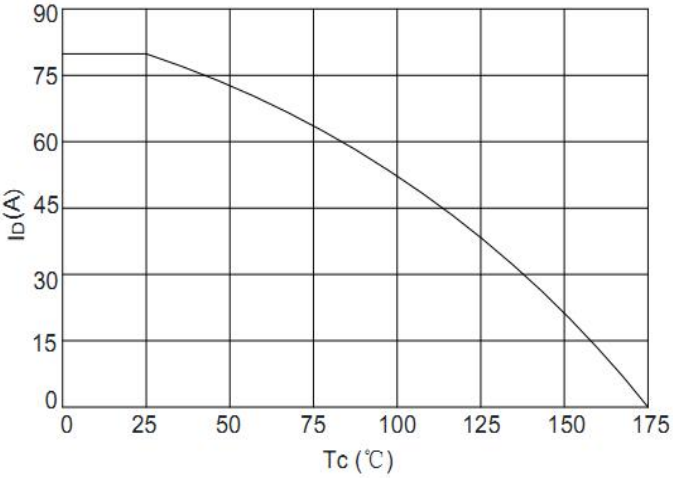
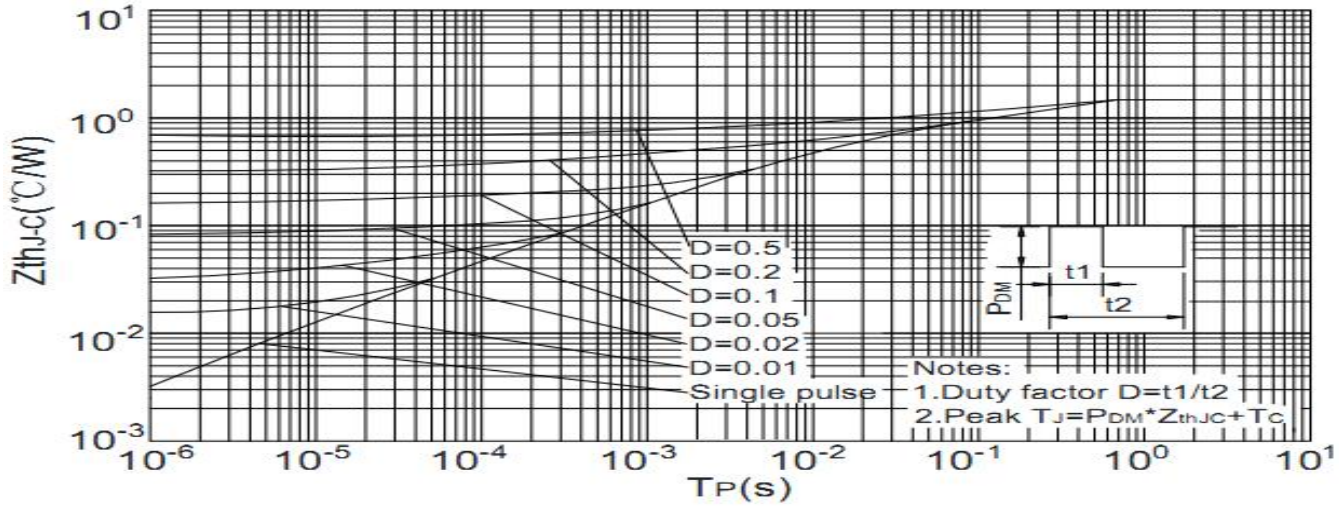


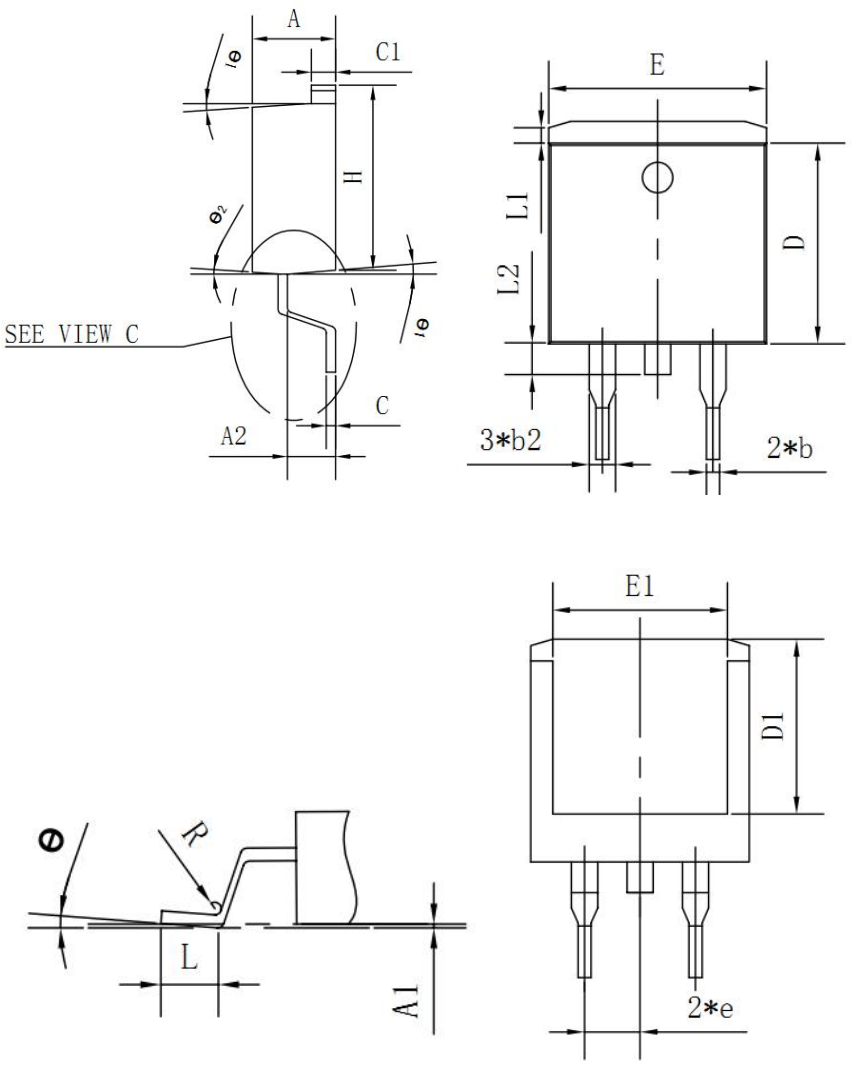
Fig.11 - Normalized Maximum Transient Thermal Impedance



Package Outline Dimensions (Unit: millimeters)

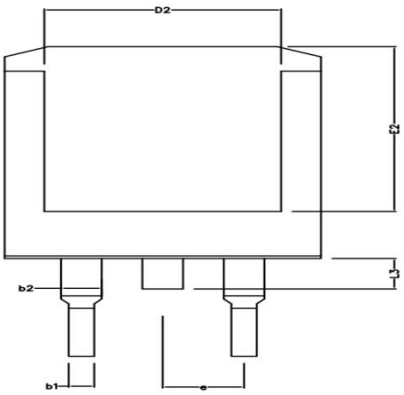
TO-263

Option 1

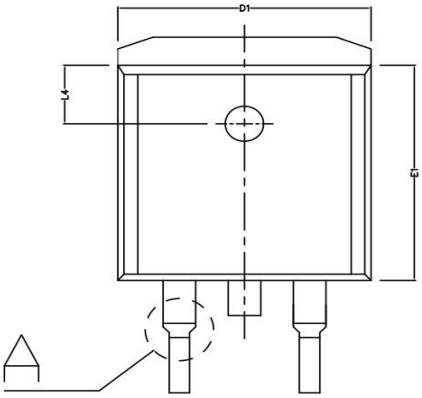


SYMBOL	MIN	NOM	MAX
A	4.35	4.47	4.60
A1	0.09	0.10	0.11
A2	2.30	2.40	2.50
b	0.70	0.80	1.00
b2	1.25	1.36	1.38
C	0.45	0.50	0.55
C1	1.29	1.30	1.31
D	9.10	9.20	9.30
D1	7.90	8.00	8.10
E	9.85	10.00	10.20
E1	7.90	8.00	8.10
H	15.30	15.50	15.70
e	-	2.54	-
L	2.34	2.54	2.74
L1	1.00	1.10	1.20
L2	1.30	1.40	1.50
R	0.24	0.25	0.26
θ	0°	4°	8°
θ1	4°	7°	10°
θ2	0°	3°	6°

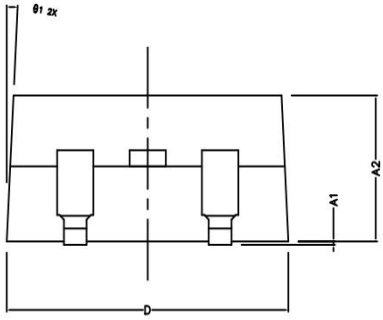
Option 2



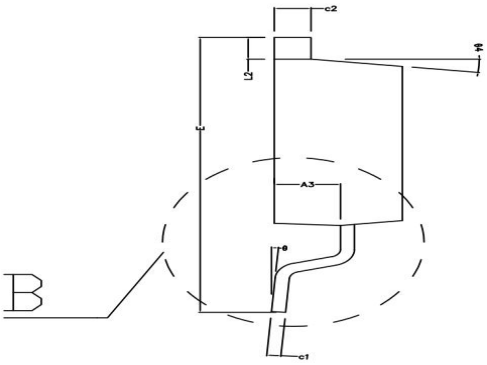
BOTTOM VIEW



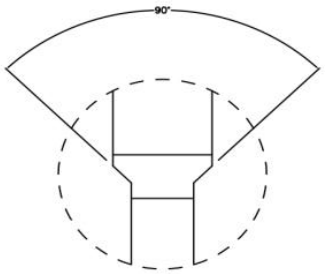
TOP VIEW



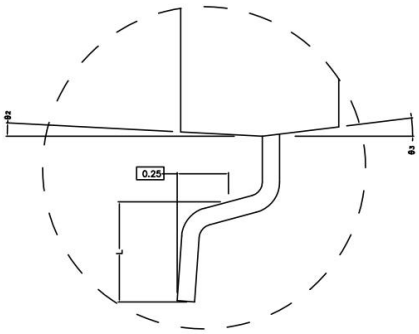
SIDE VIEW



SIDE VIEW



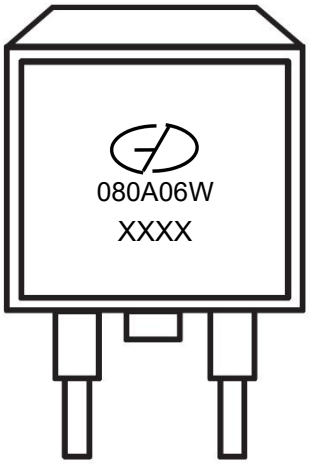
DETAIL A



DETAIL B

	MIN	NORMAL	MAX
A1	0.020	–	0.200
A2	4.470	4.570	4.670
A3	2.300	2.350	2.400
b1	0.750	–	0.850
b2	1.220	–	1.320
c1	0.500	–	0.550
c2	1.300	–	1.350
D	9.780	9.880	9.980
D1		9.880REF	
D2		7.400REF	
E	14.900	15.100	15.300
E1	9.100	9.200	9.300
E2		8.100REF	
e		2.540REF	
L	2.100	2.300	2.500
L2	1.025		1.375
L3	1.300	1.500	1.700
L4	2.400	2.500	2.600
θ1		3° TYPE	
θ2		3° TYPE	
θ3		7° TYPE	
θ4		7° TYPE	
θ		0 ~ 8°	

Marking Outline



Part Name: GMN080A06W

1. Logo Mark:
2. P/N Mark: 080A06W
3. Date Code: XXXX

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