WGN012V40G

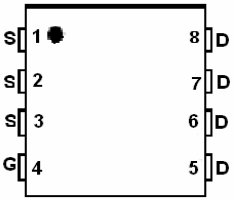
Features:

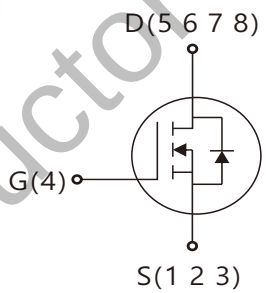
- ☐ Low Intrinsic Capacitances.
- ☐ Excellent Switching Characteristics.
- ☐ Extended Safe Operating Area.
- ☐ Unrivalled Gate Charge :Qg= 43 nC (Typ.).
- ☐ VDSS= 40V,I_D=215A
- ☐ R_{DS}(on) : 1.17mΩ (Typ) @V_G=-10V
- ☐ 100% Avalanche Tested

PDFN5X6-8L

RoHS COMPLIANT

Schematic diagram





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Absolute Maximum Ratings (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage (V_{GS}=0V)	40	V
V_{GS}	Gate-Source Voltage (V_{DS}=0V)	±20	V
I_D	Drain Current-Continuous(T_C=25℃)	215	A
	Drain Current-Continuous(T_C=100℃)	154	A
$I_{DM\ (pluse)}$	Drain Current-Continuous@ Current-Pulsed	860	A
P_D	Maximum Power Dissipation(T_C=25℃)	115	W
	Maximum Power Dissipation(T_C=100℃)	60	W
E_{AS}	Avalanche energy (ID=40A,Rg=25Ω) [1]	399	mJ
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	℃

※. Notes:

1.EAS is tested at starting Tj = 25℃, L = 0.5mH, IAS =40A, VGS = 10V.

Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JC}$	Thermal resistance, junction – case.		1.30	℃/W
$R_{\theta JA}$	Thermal resistance, junction – ambient(min. footprint)		47	℃/W

Electrical Characteristic (at Tj = 25 °C, unless otherwise specified)

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Static Characteristic						
Drain-source breakdown voltage	BV_{DSS}	40	-	-	V	V_{GS}=0V, I_D=250uA
		40	-	-	V	V_{GS}=0V, I_D=1mA
Gate threshold voltage	$V_{GS(th)}$	2	3	4	V	V_{DS}=V_{GS},I_D=250uA
Zero gate voltage drain current	I_{DSS}	- -	- -	1 100	μA	V_{DS}=40V,V_{GS}=0V T_j=25°C T_j=125°C
Gate-source leakage current	I_{GSS}	0	-	±100	nA	V_{GS}=±20V,V_{DS}=0V
Drain-source on-state resistance	$R_{DS(on)}$	-	1.17 1.60	1.45 2.50	mΩ	VGS=10V, ID=20A VGS=7V, ID=20A
Transconductance	g_{fs}	-	73.7	-	S	V_{DS}=5V, I_D=20A
Dynamic Characteristic						
Input Capacitance	C_{iss}	1807	2710	4065	pF	V_{GS}=0V, V_{DS}=20V, f=1MHz
Output Capacitance	C_{oss}	542	813	1219.5		
Reverse Transfer Capacitance	C_{rss}	23	69	207		
Gate Total Charge	Q_G	22	43	87	nC	V_{GS}=10V, V_{DS}=20V, I_D=20A
Gate-Source charge	Q_{gs}	8	15	30		
Gate-Drain charge	Q_{gd}	5	9	18		
Turn-on delay time	$t_{d(on)}$	6	12	23	ns	V_{GS}=10V, V_{DD}=20V, R_{G_ext}=3Ω ID=20A
Rise time	t_r	17	34	68		
Turn-off delay time	$t_{d(off)}$	22	44	88		
Fall time	t_f	10	21	41		
Gate resistance	R_G	-	5	10	Ω	V_{GS}=0V, V_{DS}=0V, f=1MHz

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Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Body Diode Forward Voltage	V_{SD}	-	0.8	1.3	V	V_{GS}=0V,I_{SD}=20A
Body Diode Reverse Recovery Time	t_{rr}	16	32	64	ns	I_F=20A,dI/dt=100A/μs
Body Diode Reverse Recovery Charge	Q_{rr}	11	22	45	nC	

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Typical Electrical And Thermal Characteristics (Curves)

Fig 1: Output Characteristics

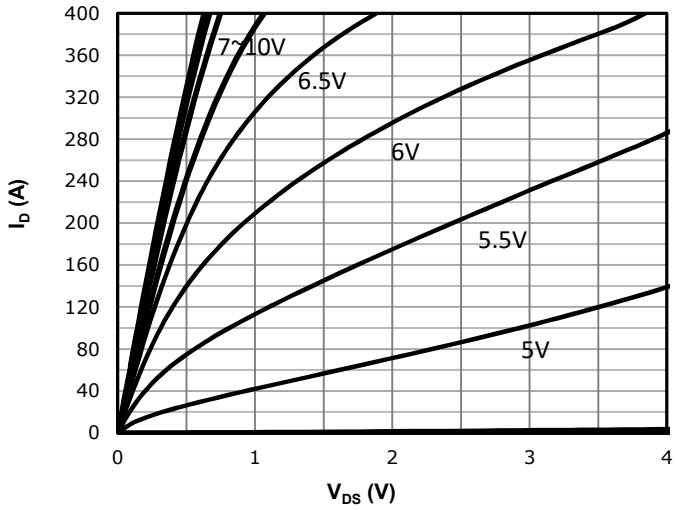


Fig 2: Transfer Characteristics

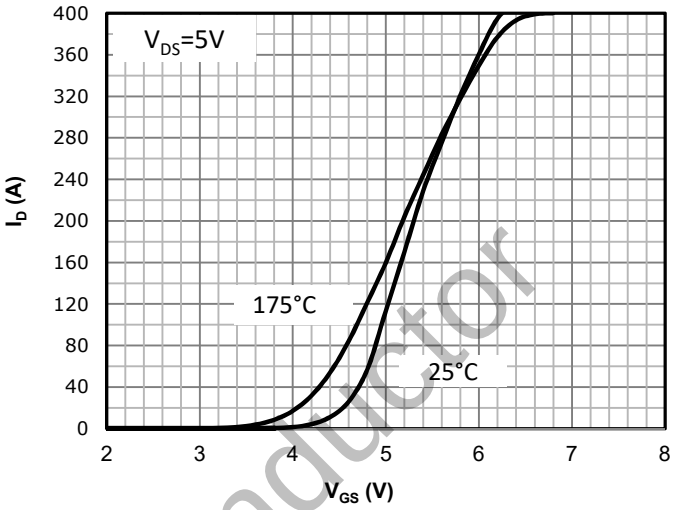


Fig 3: Rds(on) vs Drain Current and Gate Voltage

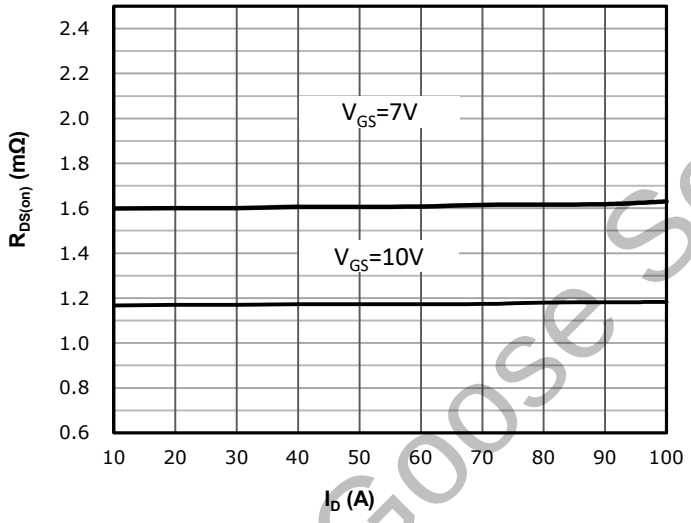


Fig 4: Rds(on) vs Gate Voltage

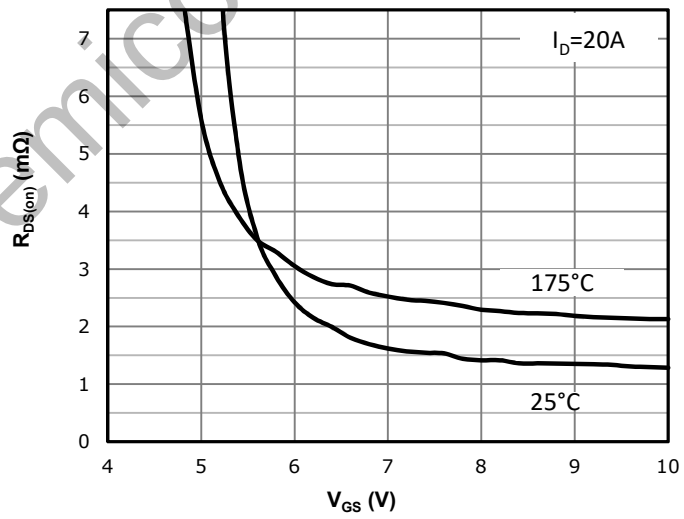


Fig 5: Rds(on) vs. Temperature

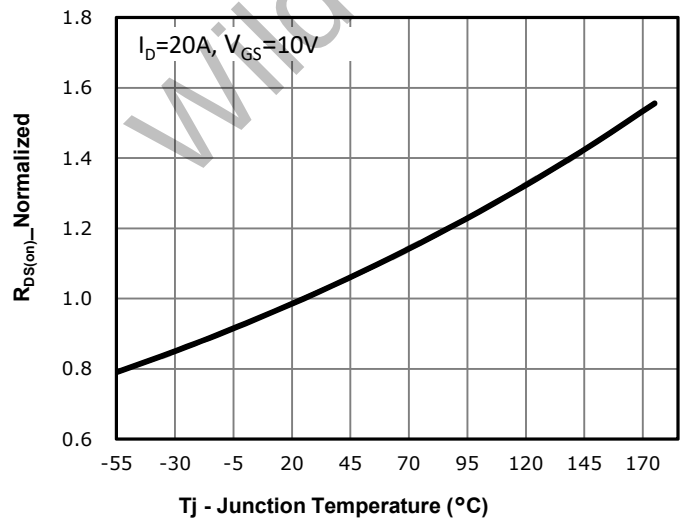
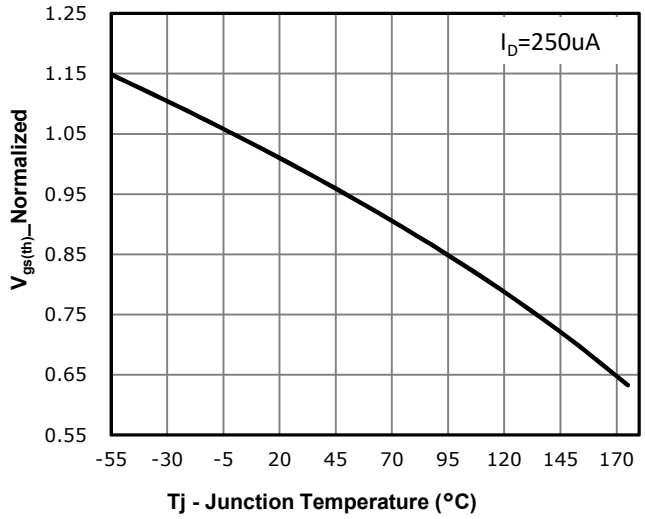


Fig 6: Vgs(th) vs. Temperature



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Typical Electrical And Thermal Characteristics (Curves)

Fig 7: BVdss vs. Temperature

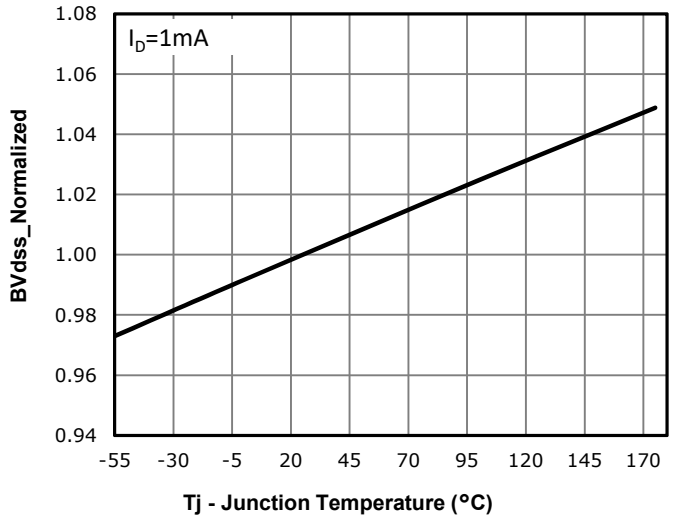


Fig 8: Capacitance Characteristics

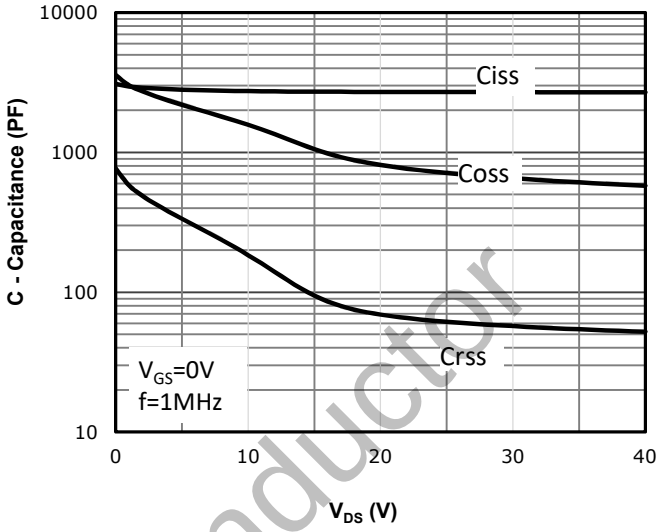


Fig 9: Gate Charge Characteristics

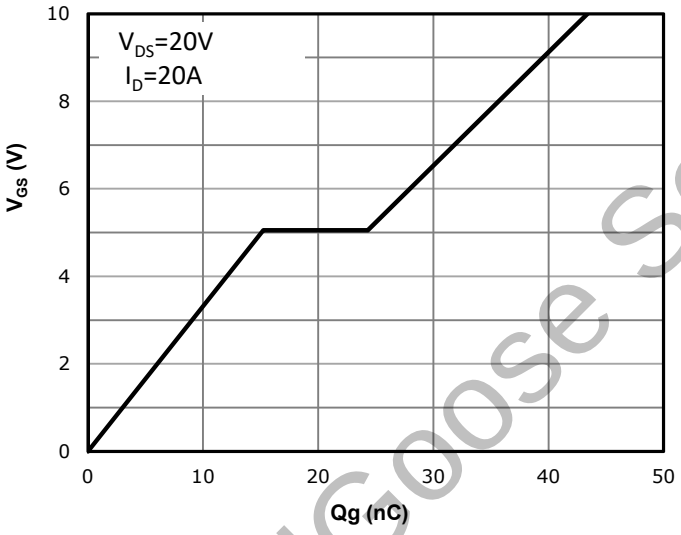


Fig 10: Body-diode Forward Characteristics

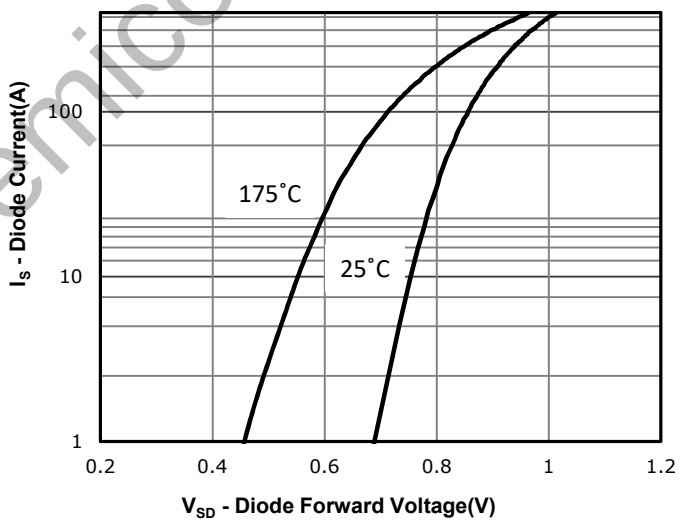


Fig 11: Power Dissipation

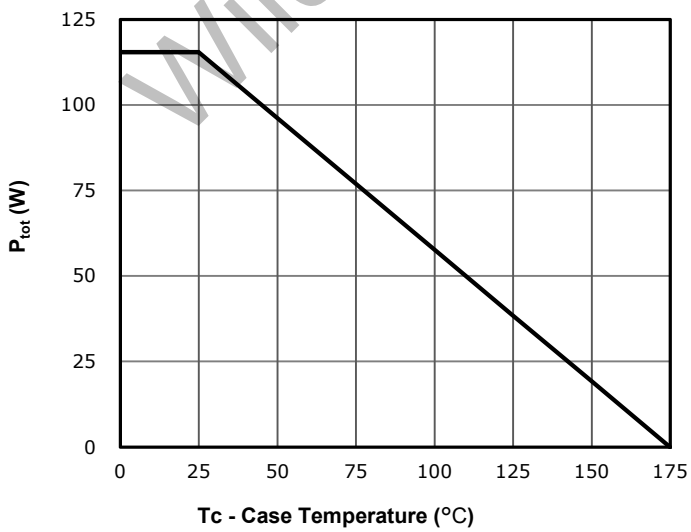
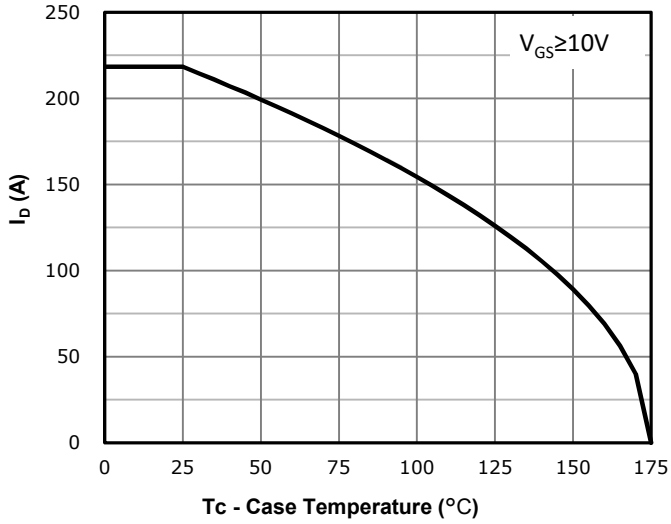


Fig 12: Drain Current Derating



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Typical Electrical And Thermal Characteristics (Curves)

Fig 13: Safe Operating Area

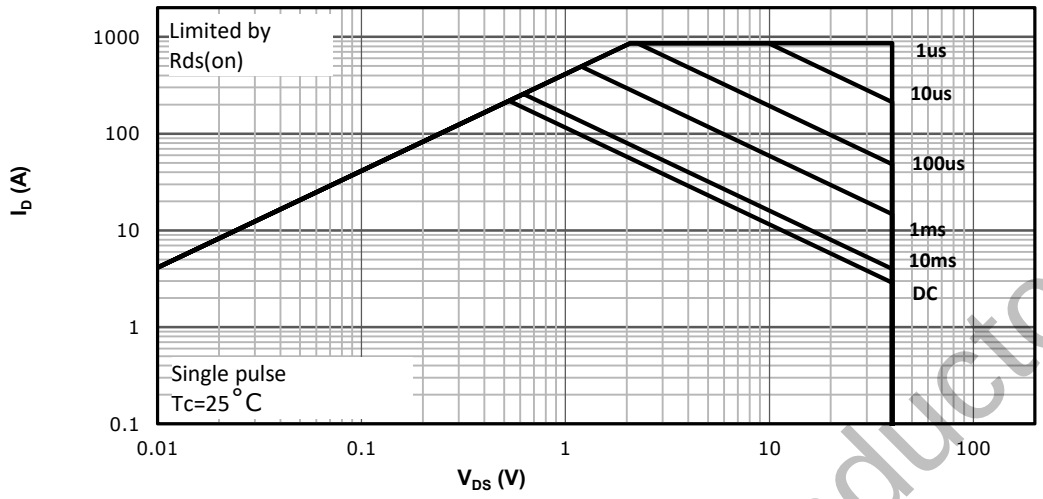
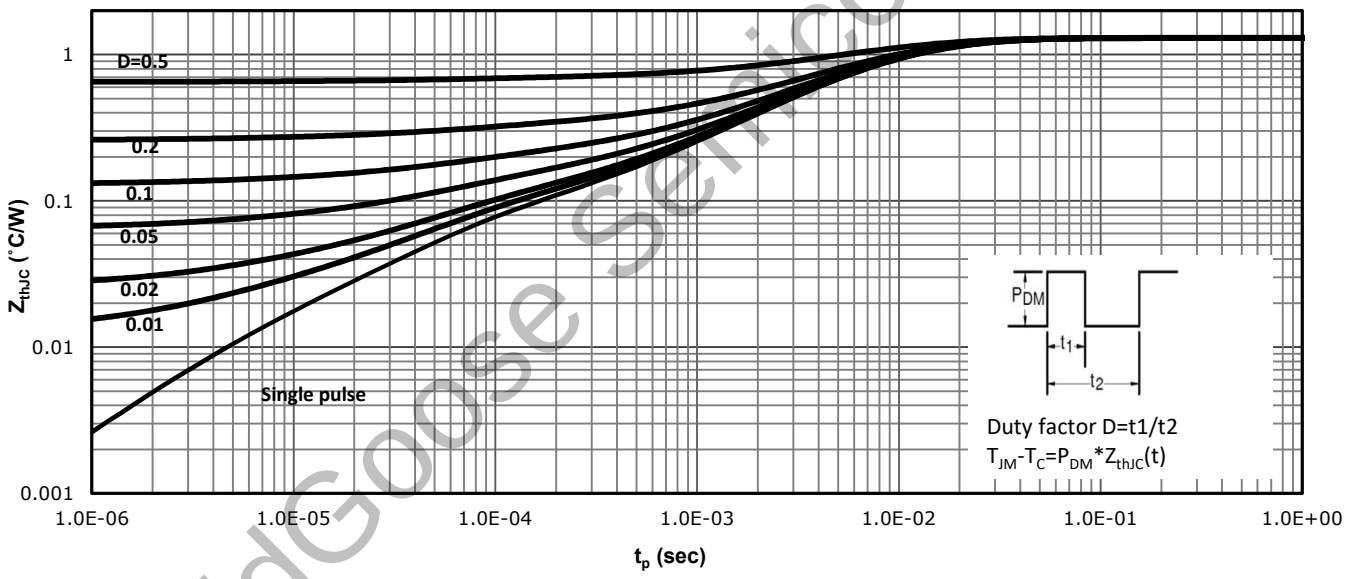


Fig 14: Max. Transient Thermal Impedance



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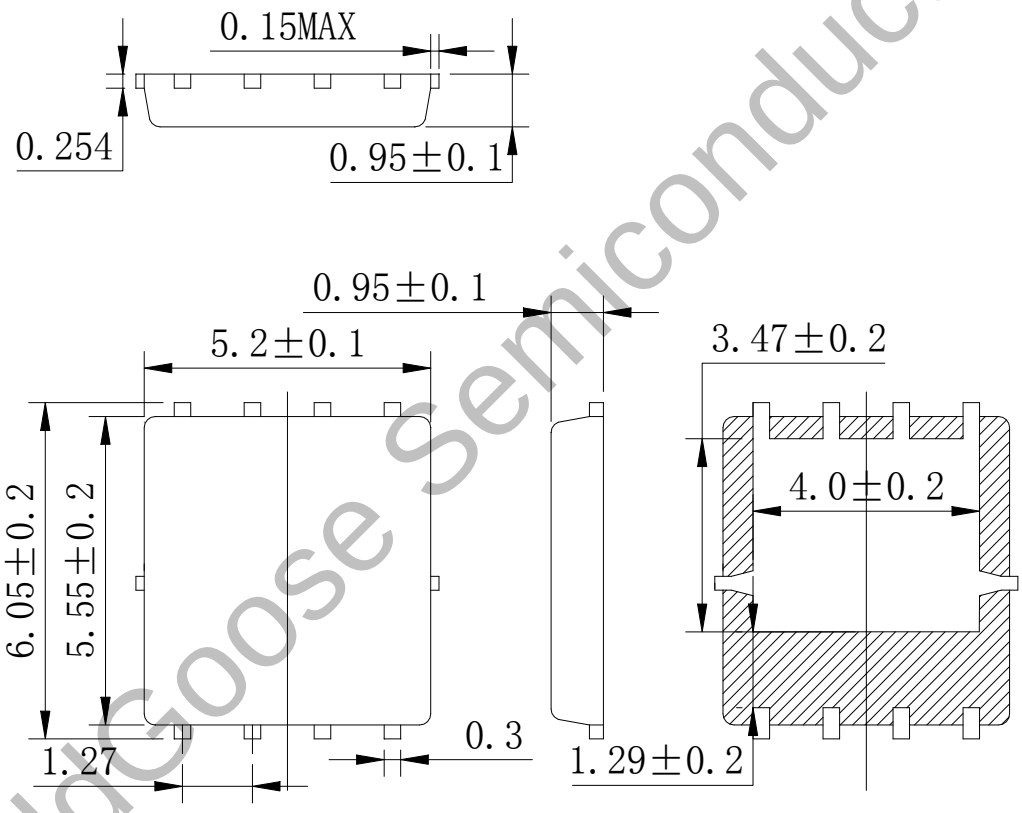
Package Dimension

PDFN5X6-8L（模一）

Unit:mm

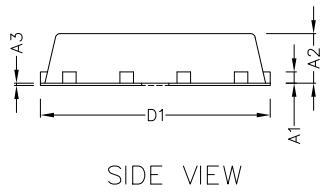


WildGoose Semiconductor

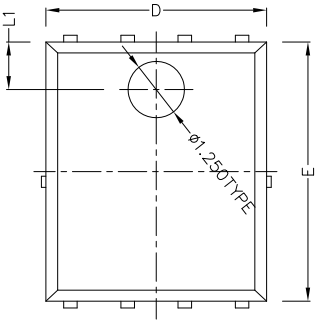
Package Dimension

PDFN5X6-8L（模二）

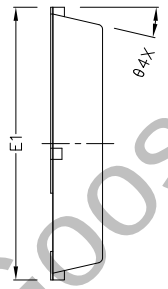
Unit:mm



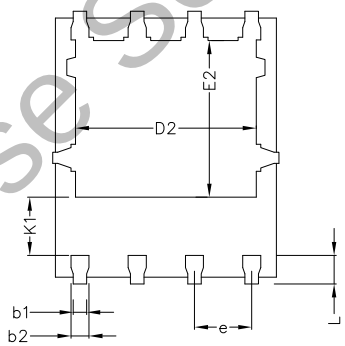
SIDE VIEW



TOP VIEW



SIDE VIEW



BOTTOM VIEW
OPTION 1

COMMON DIMENSIONS
(UNITS OF MEASURE IS mm)

	MIN	NORMAL	MAX
A1		0.254 BSC	
A2	1.000	1.100	1.200
A3	0.005	–	0.020
b1	0.250	0.300	0.350
b2	0.350	0.400	0.450
D	4.600	4.900	5.000
D1	5.000	5.100	5.200
D2	3.910	4.010	4.110
D3	1.605	1.705	1.805
E	5.650	5.750	5.850
E1	5.950	6.050	6.150
E2	3.375	3.475	3.575
e		1.270 TYPE	
L	0.530	0.630	0.730
L1		1.00REF	
θ		13° TYPE	
K		0.600 REF	
K1		1.235 REF	

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