

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
40V	0.95mΩ@10V	250A

Feature

- Fast switching
- Low gate charge and rdson
- Cu-Clip Process
- Advanced split gate trench technology

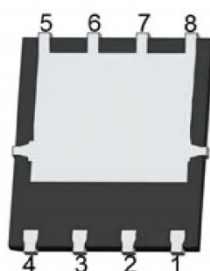
Application

- PWM Application
- Hard switched and high frequency circuits
- Power management

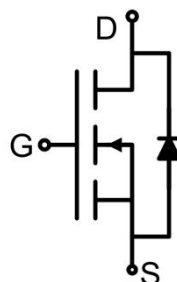
Package



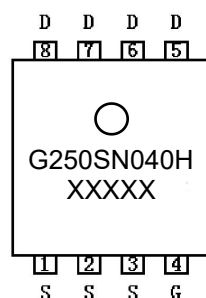
PDFN5*6-8L



Circuit diagram



Marking



Absolute maximum ratings (T_A=25°C, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	40	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current (T _C =25°C)	I _D	250	A
Continuous Drain Current (T _C =100°C)	I _D (100°C)	160	A
Pulsed Drain Current	I _{DM}	800	A
Single Pulse Avalanche Energy ¹⁾	E _{AS}	1849	mJ
Power Dissipation (T _C =25°C)	P _D	139	W
Thermal Resistance, Junction-to-Case	R _{θJC}	0.9	°C/W
Operating Junction Temperature	T _J	-55 ~ +150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_A=25°C, unless otherwise noted)

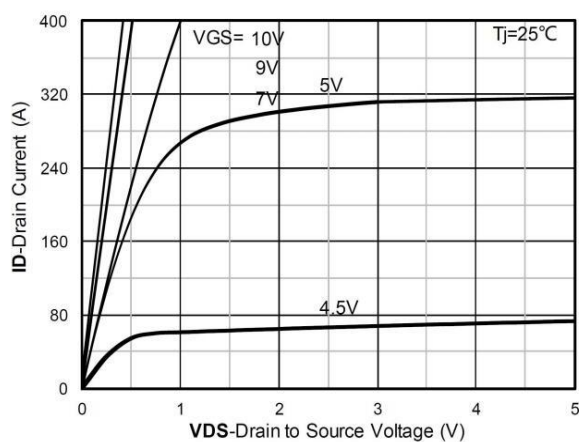
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	40			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =32V, V _{GS} =0V, T _J =25°C			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	3	4	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		0.75	0.95	mΩ
Dynamic characteristics ²⁾						
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, f =1MHz		5853		pF
Output Capacitance	C _{oss}			1475		
Reverse Transfer Capacitance	C _{rss}			118		
Total Gate Charge	Q _g	V _{DS} =20V, V _{GS} =10V I _D =120A		80		nC
Gate-Source Charge	Q _{gs}			26		
Gate-Drain Charge	Q _{gd}			16		
Turn-on delay time	t _{d(on)}	V _{DS} =20V, V _{GS} =10V I _D =120A, R _G =3.5Ω		11		nS
Turn-on rise time	t _r			6.5		
Turn-off delay time	t _{d(off)}			24		
Turn-off fall time	t _f			10		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				250	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =1A, T _J =25°C			1.2	V
Reverse recover time	T _{rr}	I _S =120A, di/dt =200A/us T _J =25°C		62		nS
Reverse recovery charge	Q _{rr}			78		nC

Notes:

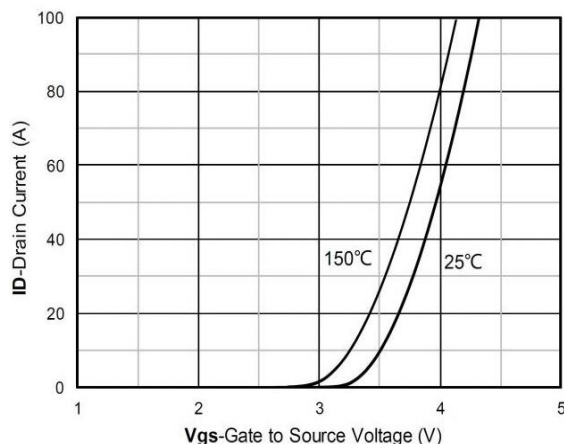
1) The test condition is V_{DD}=20V, V_{GS}=10V, L=0.5mH, R_G=25Ω.

2) Guaranteed by design, not subject to production.

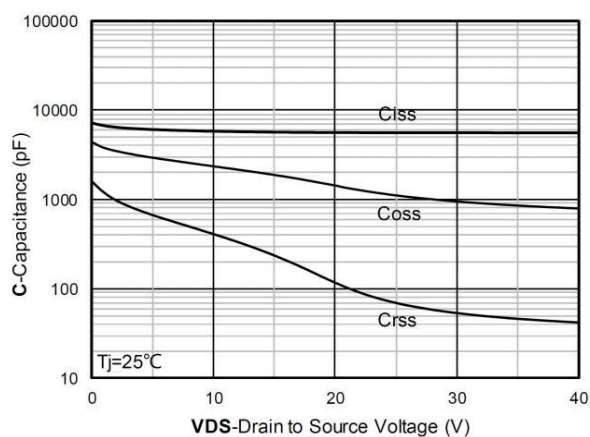
Typical Characteristics



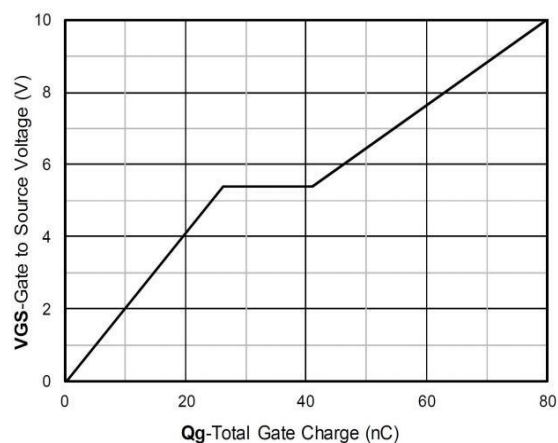
Output Characteristics



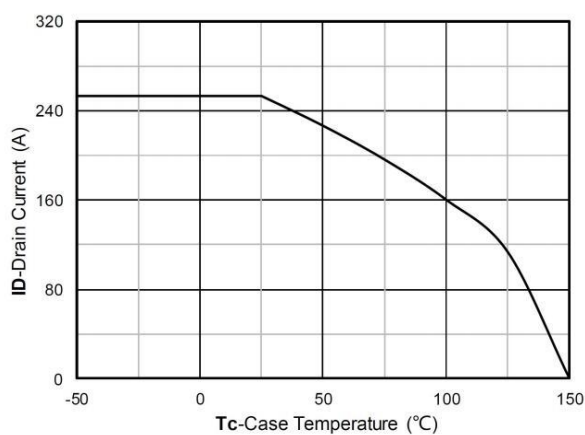
Transfer Characteristics



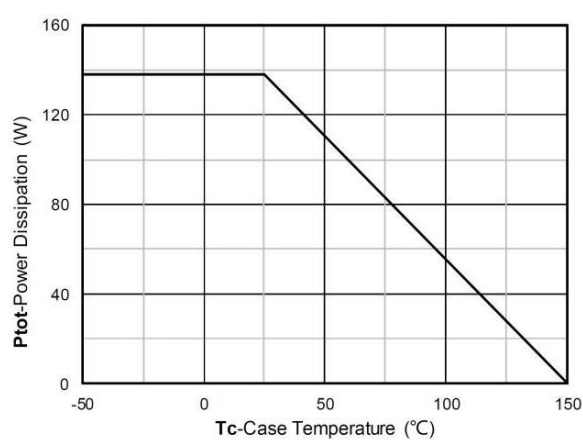
Capacitance Characteristics



Gate Charge

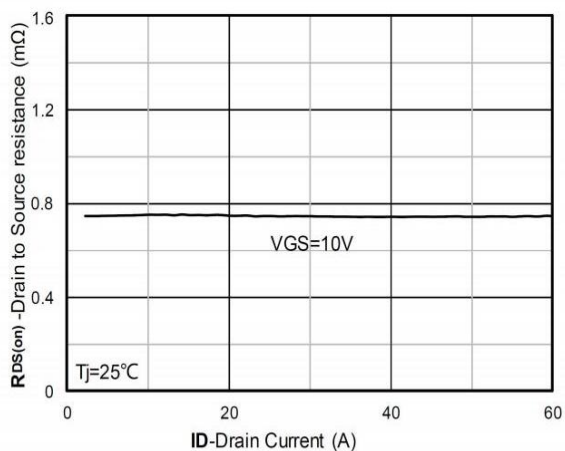


Current dissipation

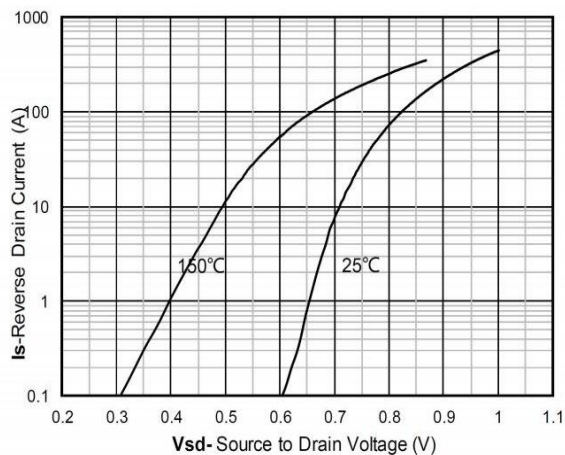


Power dissipation

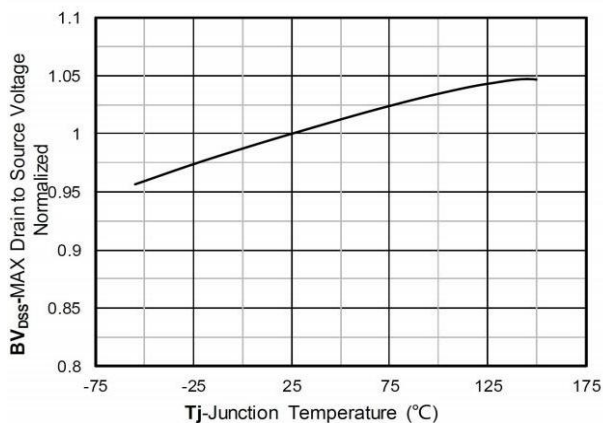
Typical Characteristics



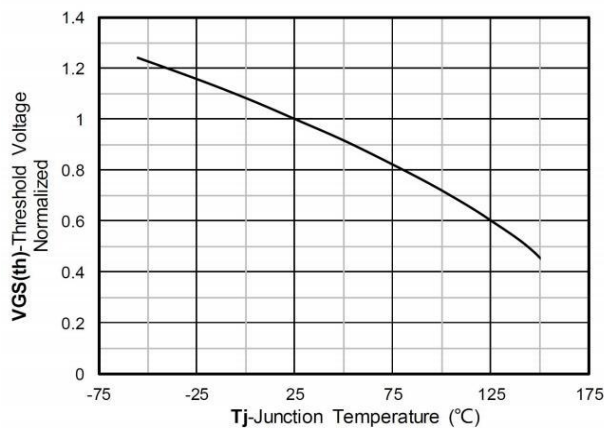
RDS(on) VS Drain Current



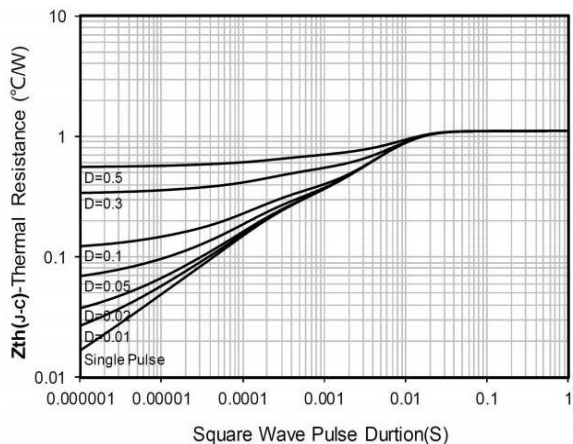
Forward characteristics of reverse diode



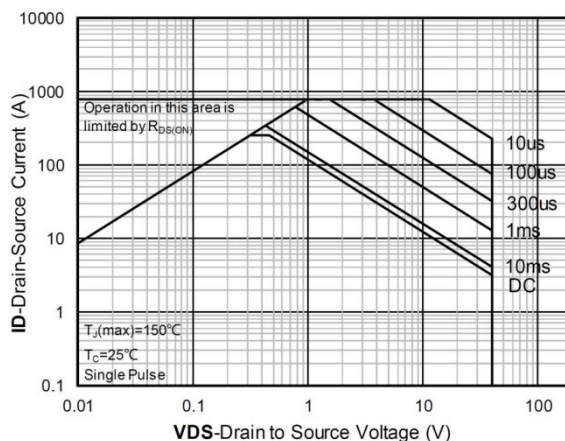
Normalized breakdown voltage



Normalized Threshold voltage

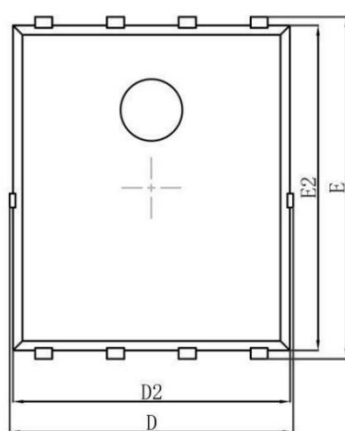


Maximum Transient Thermal Impedance

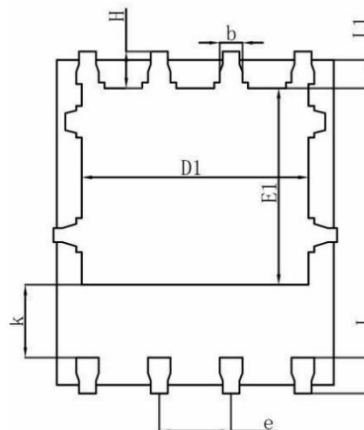


Safe Operation Area

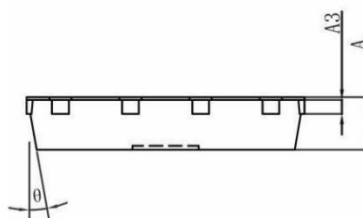
PDFN5*6-8L Package Information



Top View



Bottom View



Side View

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270 TYP.		0.050 TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°