

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
40V	2.5mΩ@10V	120A

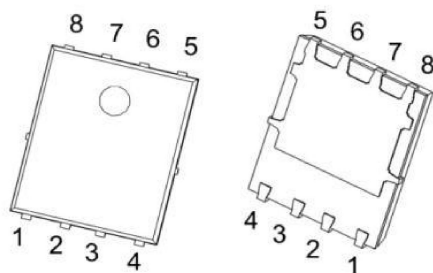
Feature

- Fast Switching
- Low Gate Charge and Rdson
- Advanced Split Gate Trench Technology

Application

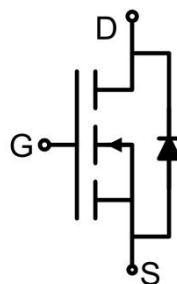
- Power switching application
- PWM Application
- DC-DC Converter

Package

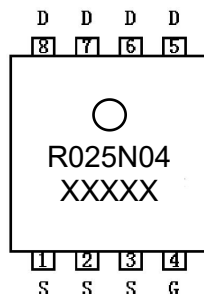


PDFN5*6-8L

Circuit diagram



Marking



Absolute maximum ratings (Ta=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 ($T_C = 25^\circ\text{C}$)	I_D	120	A
Continuous Drain Current ($T_C = 100^\circ\text{C}$)	$I_D(100^\circ\text{C})$	80	A
Pulsed Drain Current	I_{DM}	480	A
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	83	W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.5	$^\circ\text{C}/\text{W}$
Single pulse avalanche energy ¹⁾	E_{AS}	276	mJ
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

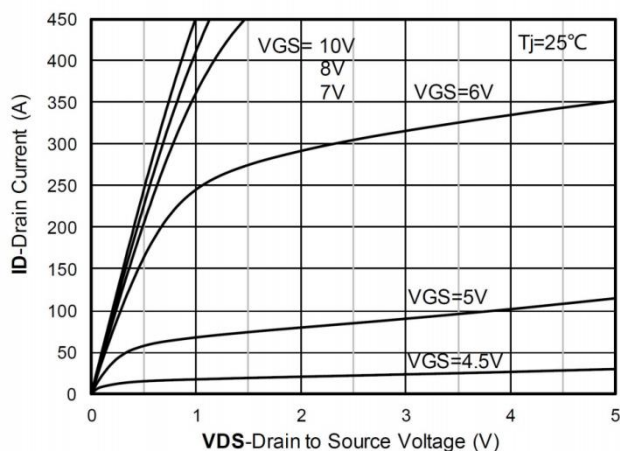
Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	40			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 32V, V_{GS} = 0V, T_J = 25^{\circ}C$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	3	4	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$		2.0	2.5	m Ω
Dynamic characteristics ²⁾						
Input Capacitance	C_{iss}	$V_{DS} = 20V, V_{GS} = 0V, f = 1MHz$		2040		pF
Output Capacitance	C_{oss}			1180		
Reverse Transfer Capacitance	C_{rss}			41		
Total Gate Charge	Q_g	$V_{DS} = 20V, V_{GS} = 10V, I_D = 20A$		27		nC
Gate-Source Charge	Q_{gs}			9		
Gate-Drain Charge	Q_{gd}			4.6		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 20V, V_{GS} = 10V, I_D = 20A, R_G = 3.0\Omega$		3.8		nS
Turn-on rise time	t_r			13		
Turn-off delay time	$t_{d(off)}$			13		
Turn-off fall time	t_f			6.6		
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	$V_{GS} = 0V, I_S = 1A, T_J = 25^{\circ}C$			1.2	V
Diode Continuous Current	I_S				120	A
Reverse recover time	T_{rr}	$I_S = 20A, di/dt = 100A/us, T_J = 25^{\circ}C$		42		nS
Reverse recovery charge	Q_{rr}			40		nC

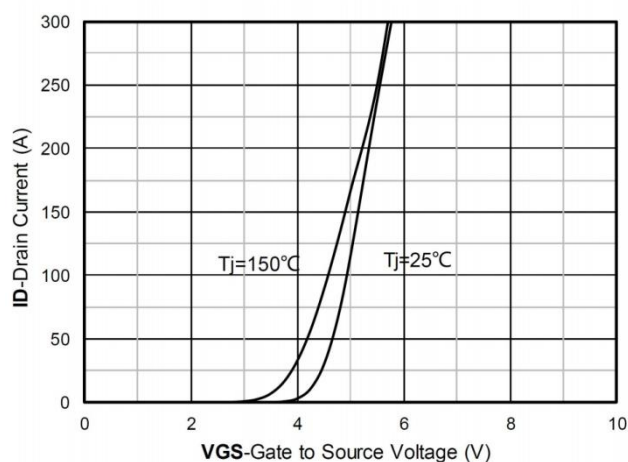
Notes:

- 1) The EAS Test condition is $V_{DD} = 20V, V_{GS} = 10V, L = 0.5mH, R_G = 25\Omega$
- 2) Guaranteed by design, not subject to production testing.

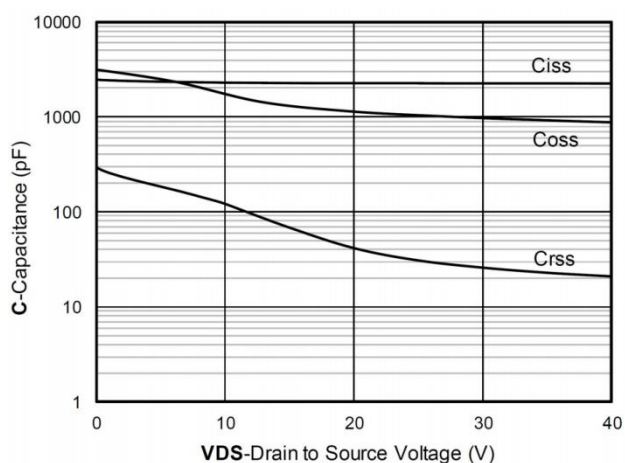
Typical Characteristics



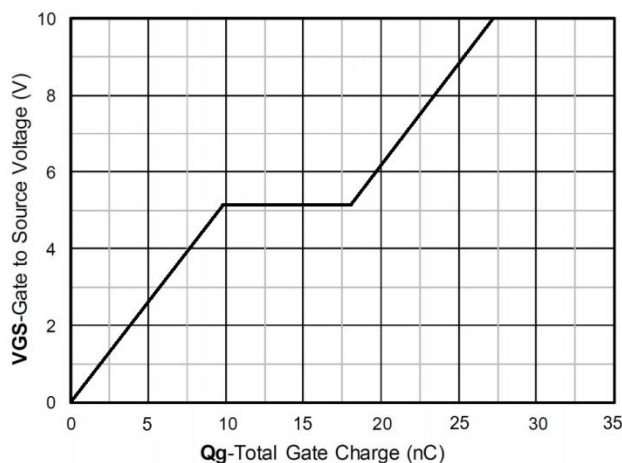
Output Characteristics



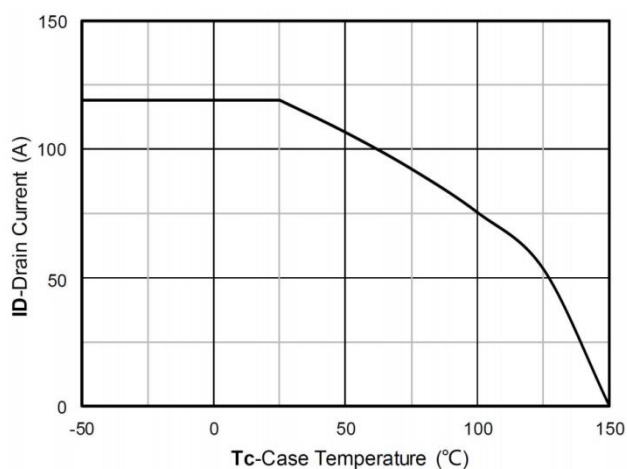
Transfer Characteristics



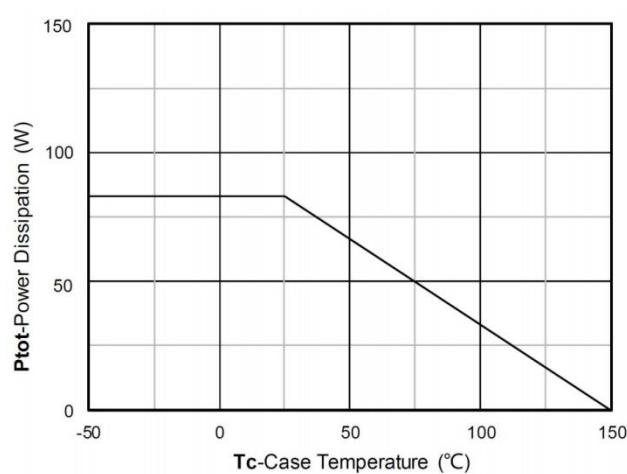
Capacitance Characteristics



Gate Charge

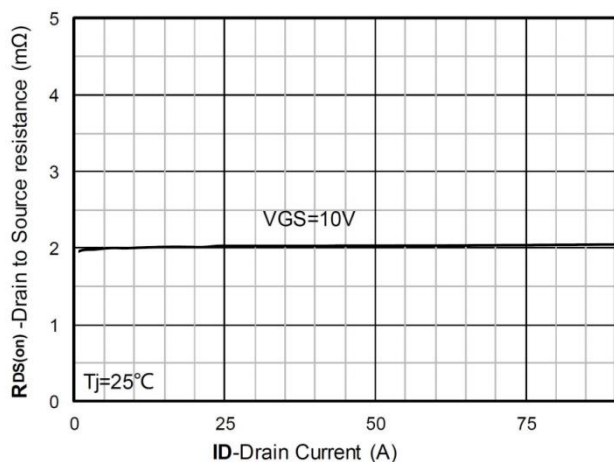


Current dissipation

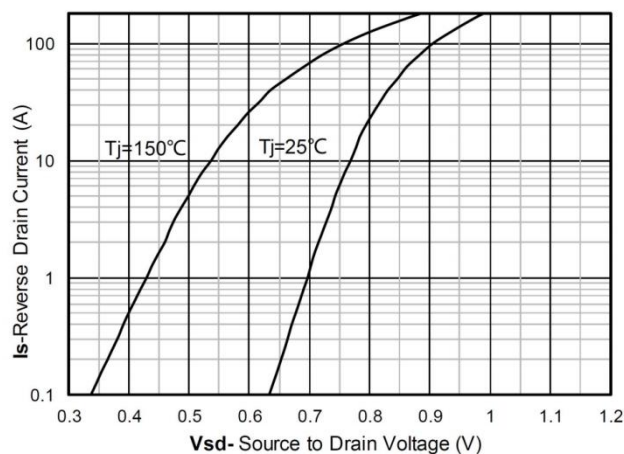


Power dissipation

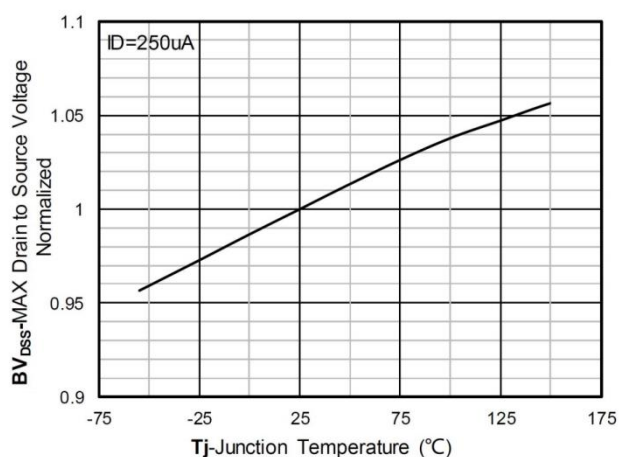
Typical Characteristics



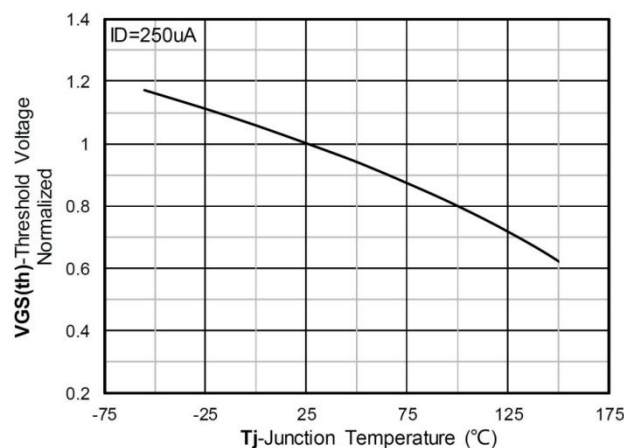
$R_{DS(on)}$ VS Drain Current



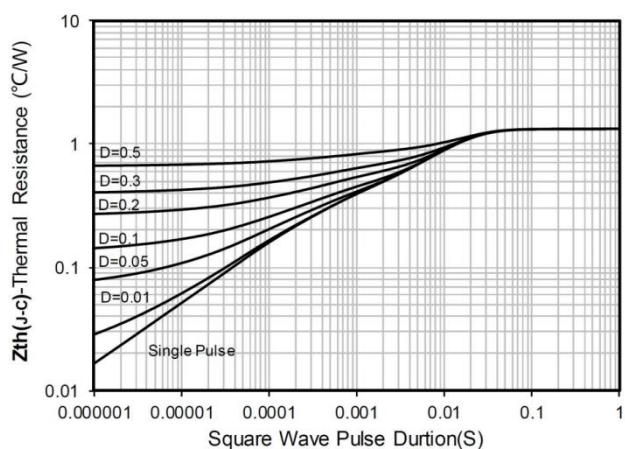
Forward characteristics of reverse diode



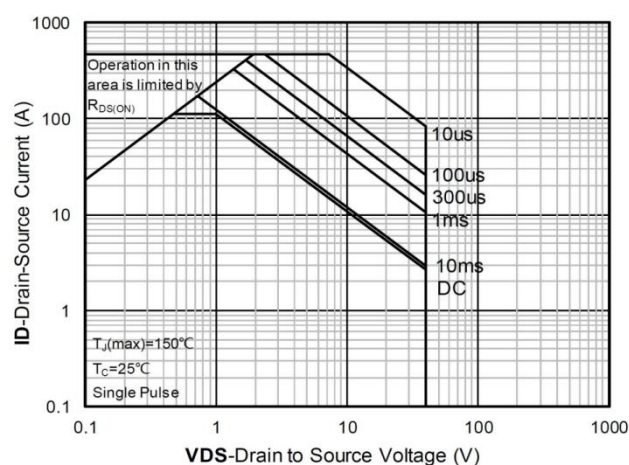
Normalized breakdown voltage



Normalized Threshold voltage

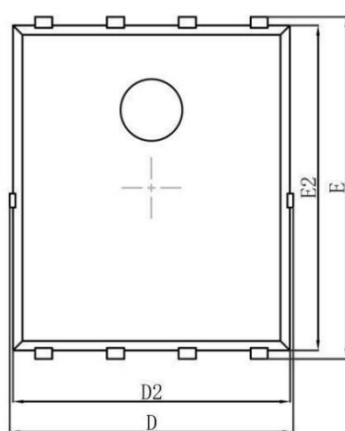


Maximum Transient Thermal Impedance

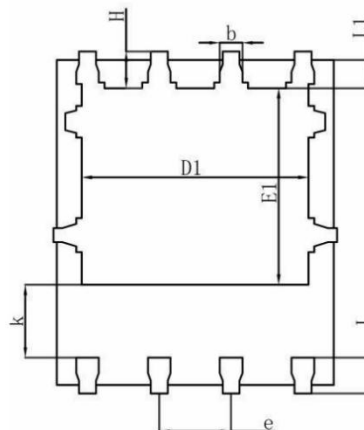


Safe Operation Area

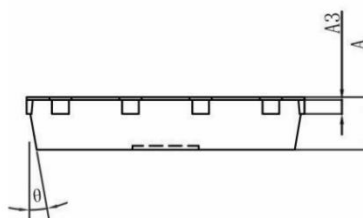
PDFN5*6-8L Package Information



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	1.270TYP.		0.050TYP.	
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°