

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
40V	7.4mΩ@10V	55A
	10mΩ@4.5V	

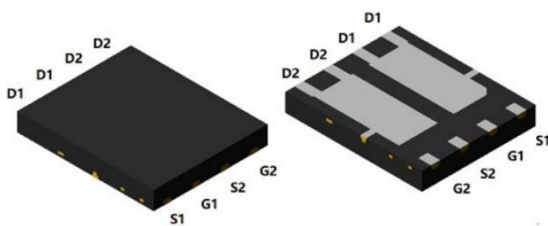
Feature

- Fast switching speed
- Low gate charge and $R_{DS(on)}$
- Advanced split gate trench technology

Application

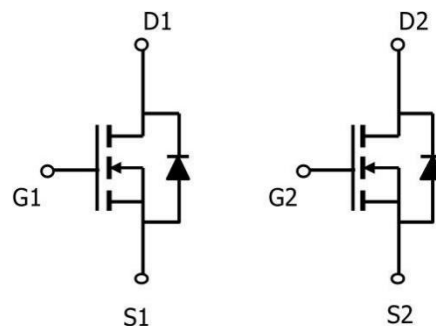
- DC/DC converter
- Motor Control

Package

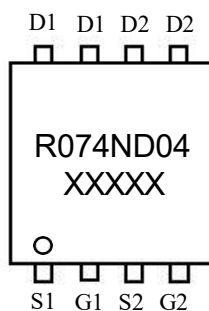


PDFN5*6-8L

Circuit diagram



Marking



Absolute maximum ratings ($T_A=25^{\circ}\text{C}$ 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	55	A
Continuous Drain Current($T_C=100^{\circ}\text{C}$)	$I_D(100^{\circ}\text{C})$	37	A
Pulsed Drain Current	I_{DM}	220	A
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	92	W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.35	$^{\circ}\text{C/W}$
Single pulse avalanche energy ¹⁾	E_{AS}	110	mJ
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

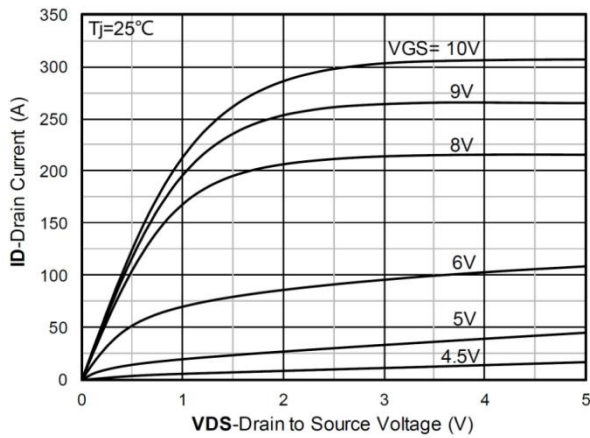
Electrical characteristics ($T_A=25^{\circ}\text{C}$, unless otherwise noted)

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℃			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} = 0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.0	1.5	2.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =15A		5.5	7.4	mΩ
		V _{GS} =4.5V, I _D =10A		7.5	10.0	
Dynamic characteristics ²⁾						
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, f =1MHz		885		pF
Output Capacitance	C _{oss}			478		
Reverse Transfer Capacitance	C _{rss}			12.1		
Total Gate Charge	Q _g	V _{DS} =20V, V _{GS} =10V, I _D =20A		35		nC
Gate-Source Charge	Q _{gs}			6.4		
Gate-Drain Charge	Q _{gd}			3.5		
Turn-on delay time	t _{d(on)}	V _{DD} =20V, V _{GS} =10V, I _D =20A, R _G =1.6Ω		8		nS
Turn-on rise time	t _r			5		
Turn-off delay time	t _{d(off)}			24		
Turn-off fall time	t _f			3.5		
Source-Drain Diode characteristics						
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =1A,T _J =25℃			1.2	V
Diode Forward Current	I _S				55	A
Reverse Recovery Time	T _{rr}	I _S =10A,di/dt = 300A/μs, T _J =25℃		14		nS
Reverse Recovery Charge	Q _{rr}			16		nC

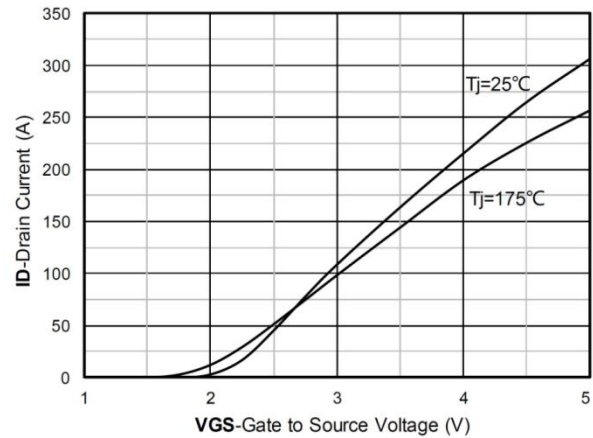
Notes:

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

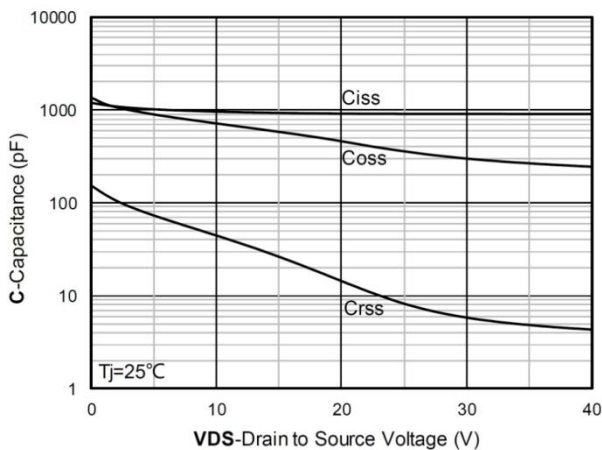
Typical Characteristics



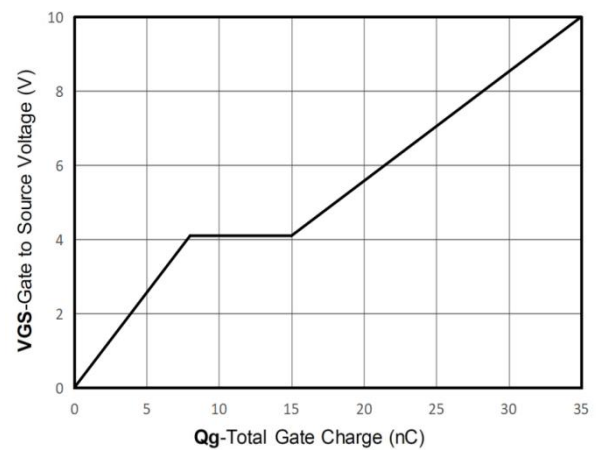
Output Characteristics



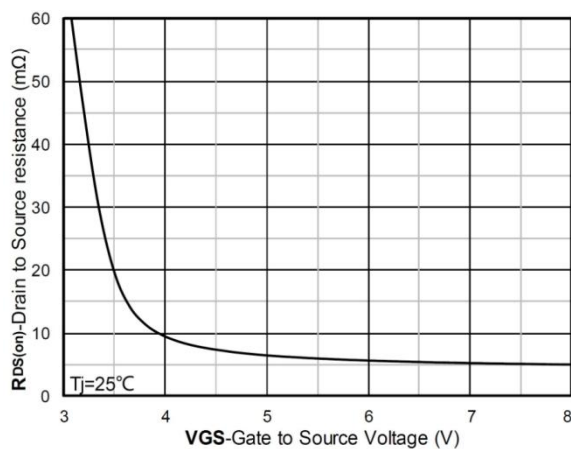
Transfer Characteristics



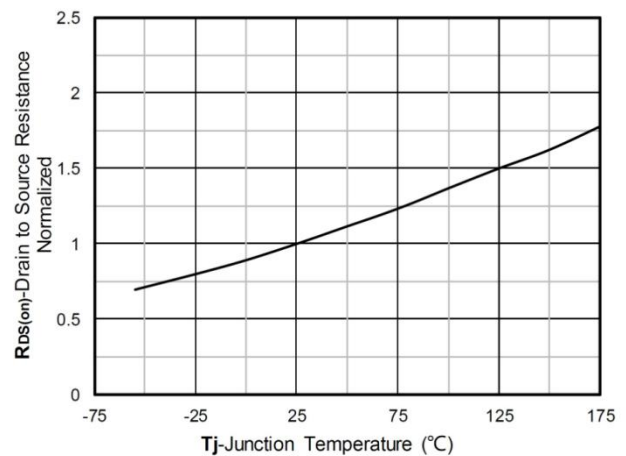
Capacitance Characteristics



Gate Charge

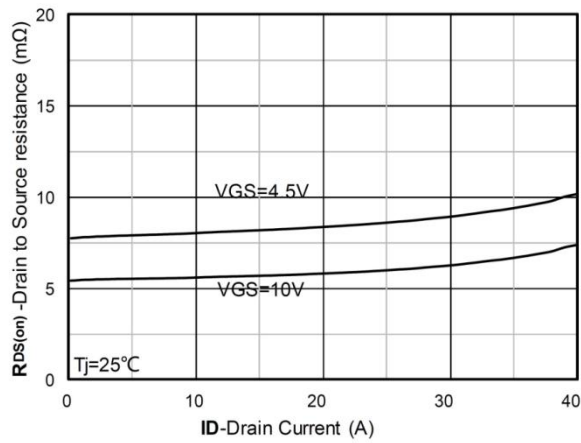


On-Resistance vs Gate to Source Voltage

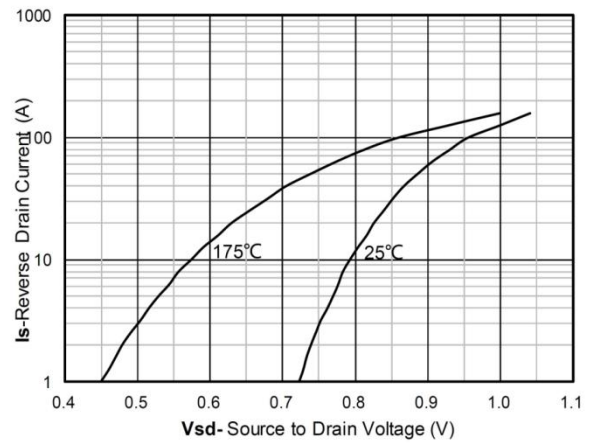


Normalized On-Resistance

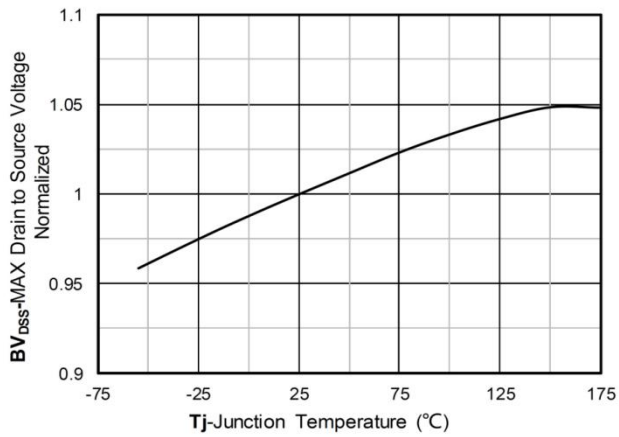
Typical Characteristics



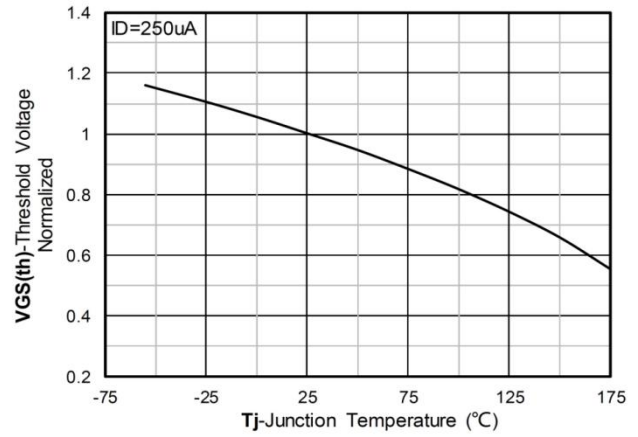
RDS(on) VS Drain Current



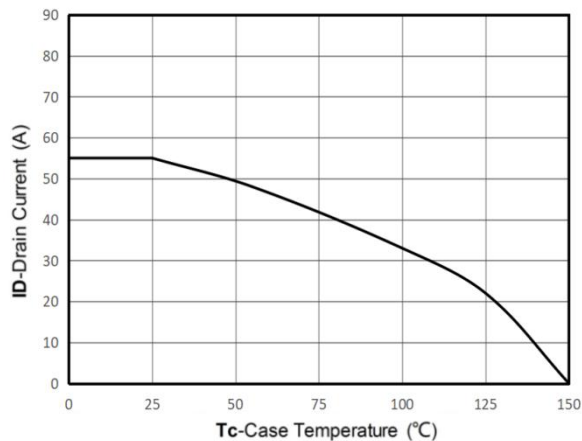
Forward characteristics of reverse diode



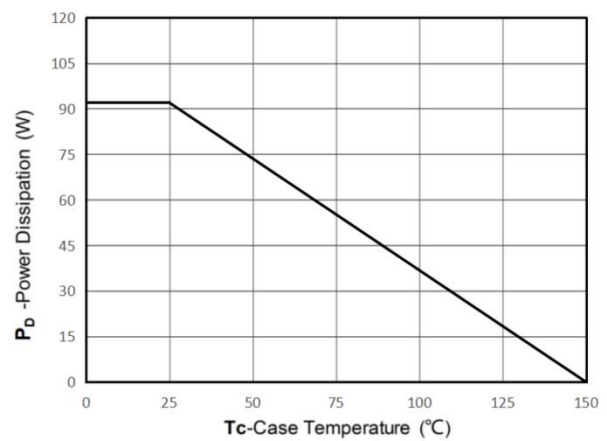
Normalized breakdown voltage



Normalized Threshold voltage

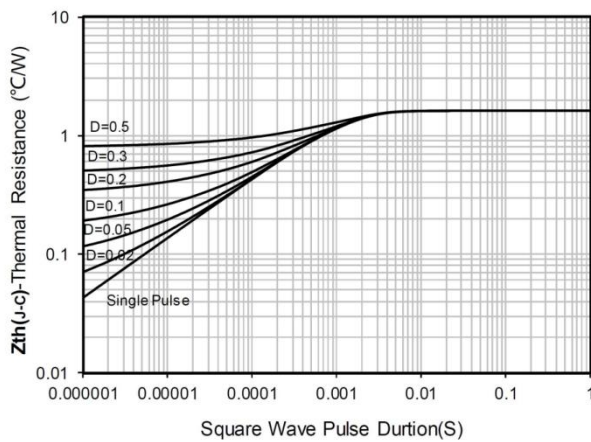


Current dissipation

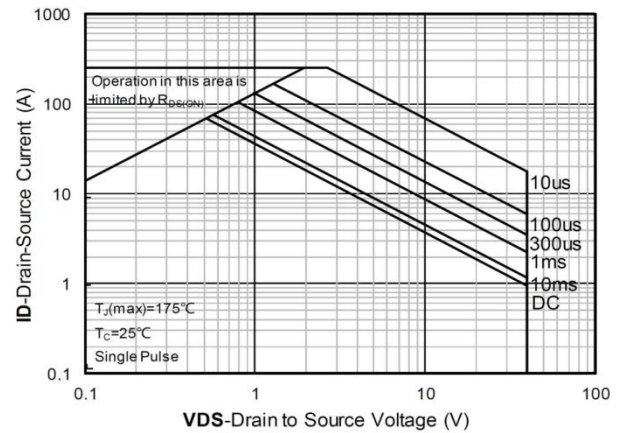


Power dissipation

Typical Characteristics

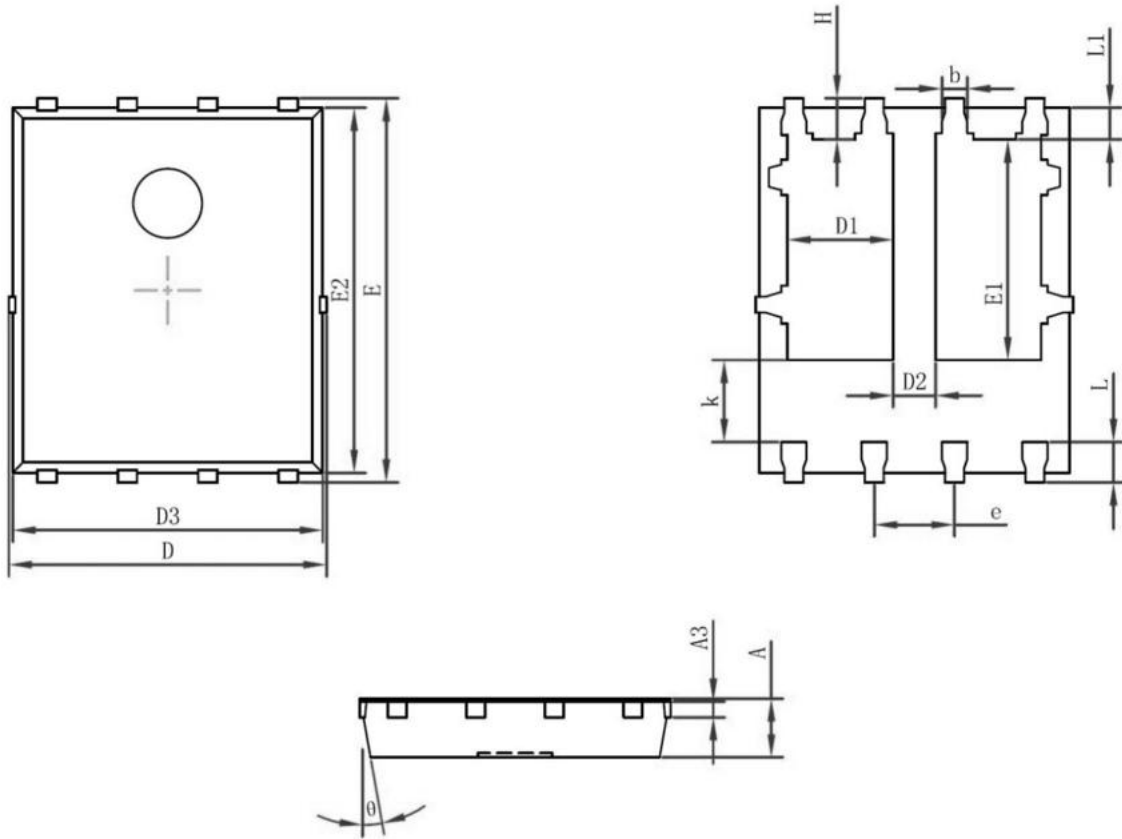


Maximum Transient Thermal Impedance



Safe Operation Area

PDFN5*6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254 REF.		0.010 REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	1.470	1.870	0.058	0.074
D2	0.470	0.870	0.019	0.034
E1	3.375	3.575	0.133	0.141
D3	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°