

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D	$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
30V	15mΩ@10V	18A	-30V	27mΩ@-10V	-12A
	21mΩ@4.5V			40mΩ@-4.5V	

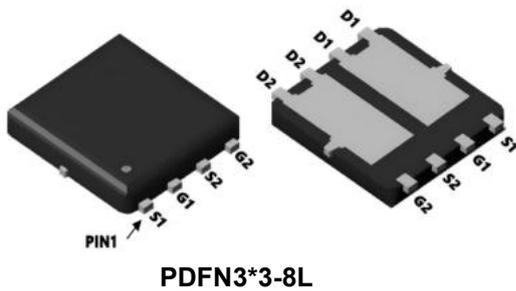
Feature

- Fast switching speed
- Surface mount package

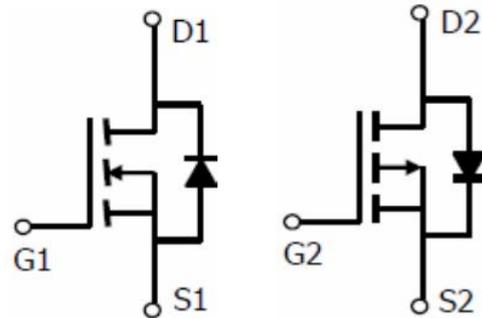
Application

- DC-DC converters
- Motor control

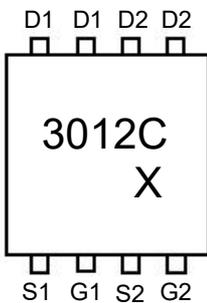
Package



Circuit diagram



Marking



Absolute maximum ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage	V_{DS}	30	-30	V
Gate-Source Voltage	V_{GS}	± 20	± 20	V
Continuous Drain Current ($T_C=25^\circ\text{C}$)	I_D	18	-12	A
Pulsed Drain Current	I_{DM}	72	-48	A
Single Pulse Avalanche Energy ^{1,2)}	E_{AS}	42	49	mJ
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	16	16	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	7.8	7.8	$^\circ\text{C/W}$
Operating Junction Temperature	T_J	-55 ~ +150	-55 ~ +150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	-55 ~ +150	$^\circ\text{C}$

N-CH 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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu\text{A}$	30			V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=24V, V_{GS}=0V, T_J=25^\circ\text{C}$			1	μA
Gate-body leakage current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	1	1.5	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=8A$		11	15	m Ω
		$V_{GS}=4.5V, I_D=6A$		16	21	
Dynamic characteristics³⁾						
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$		940		pF
Output Capacitance	C_{oss}			131		
Reverse Transfer Capacitance	C_{rss}			109		
Total Gate Charge	Q_g	$V_{DS}=15V, V_{GS}=10V, I_D=8A$		20.5		nC
Gate-Source Charge	Q_{gs}			3.9		
Gate-Drain Charge	Q_{gd}			3.4		
Turn-on delay time	$t_{d(on)}$	$V_{DS}=15V, V_{GS}=10V, I_D=8A$ $R_G=1.5\Omega$		4.2		nS
Turn-on rise time	t_r			8.2		
Turn-off delay time	$t_{d(off)}$			31		
Turn-off fall time	t_f			4		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				18	A
Diode Forward voltage	V_{SD}	$V_{GS}=0V, I_S=1A, T_J=25^\circ\text{C}$			1.2	V
Reverse Recovery Time	T_{rr}	$I_S=20A, di/dt=-100A/\mu\text{s}$		1.2		nS
Reverse Recovery Charge	Q_{rr}	$T_J=25^\circ\text{C}$		9		nC

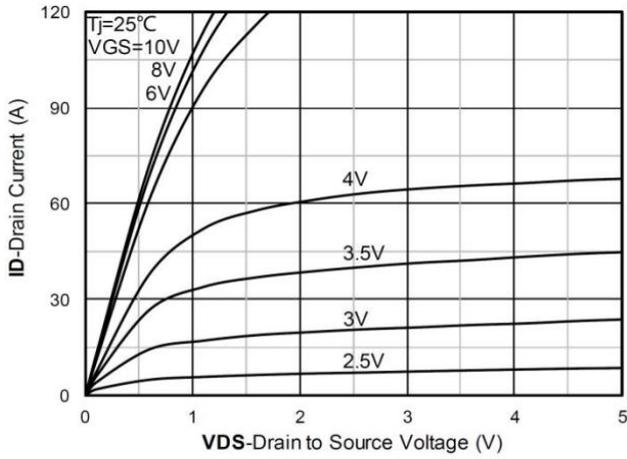
P-CH Electrical characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = -24V, 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	-1	-1.5	-2.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} = -10V, I _D = -6A		21	27	mΩ
		V _{GS} = -4.5V, I _D = -4A		30	40	
Dynamic characteristics³⁾						
Input Capacitance	C _{iss}	V _{DS} = -15V, V _{GS} = 0V, f = 1MHz		1070		pF
Output Capacitance	C _{oss}			146		
Reverse Transfer Capacitance	C _{rss}			142		
Total Gate Charge	Q _g	V _{DS} = -15V, V _{GS} = -10V, I _D = -6A		21		nC
Gate-Source Charge	Q _{gs}			2.1		
Gate-Drain Charge	Q _{gd}			5.6		
Turn-on delay time	t _{d(on)}	V _{DS} = -15V, V _{GS} = -10V I _D = -1A, R _G = 6Ω		7		nS
Turn-on rise time	t _r			9		
Turn-off delay time	t _{d(off)}			30		
Turn-off fall time	t _f			18		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				-12	A
Diode Forward voltage	V _{SD}	V _{GS} = 0V, I _S = -1A, T _J = 25°C			-1.2	V
Reverse Recovery Time	T _{rr}	I _S = -20A, di/dt = -100A/μs T _J = 25°C		50		nS
Reverse Recovery Charge	Q _{rr}			31		nC

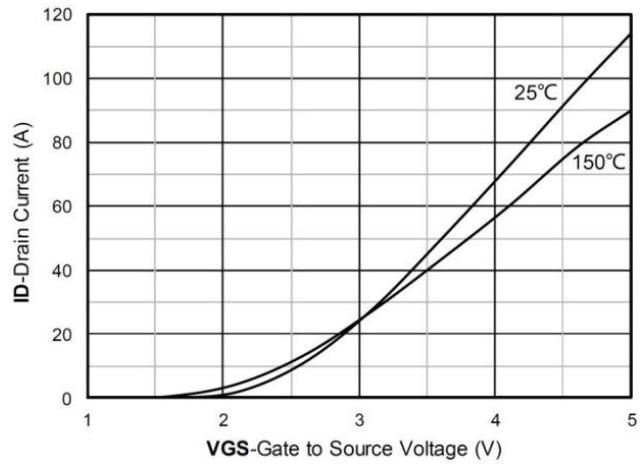
Notes:

- 1) The N-channel EAS test condition is V_{DD}=15V, V_{GS}=10V, L=0.5mH, R_G=25Ω.
- 2) The P-channel EAS test condition is V_{DD}=-15V, V_{GS}=-10V, L=0.5mH, R_G=25Ω.
- 3) Guaranteed by design, not subject to production.

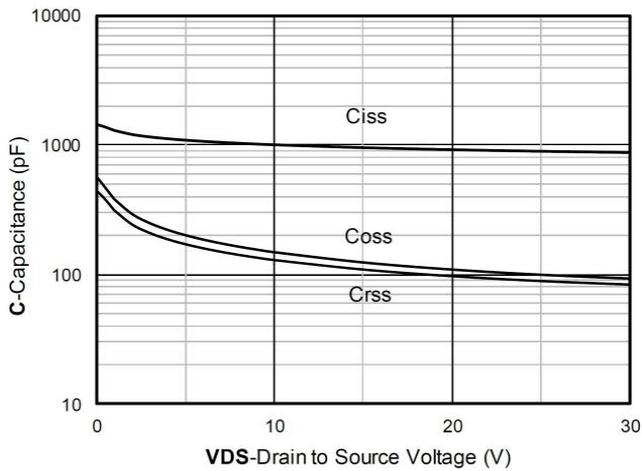
N-Channel Typical Characteristics



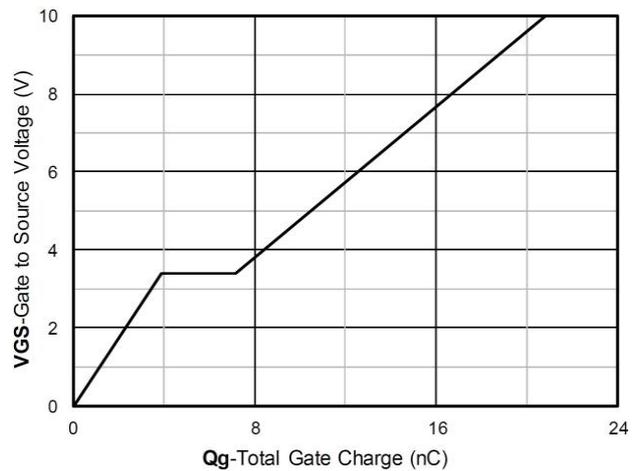
Output Characteristics



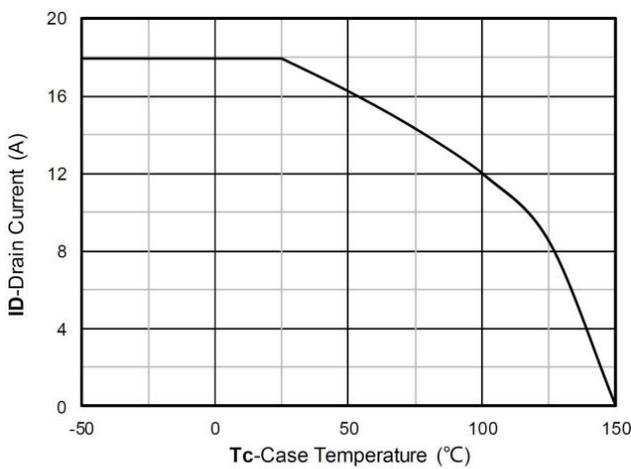
Transfer Characteristics



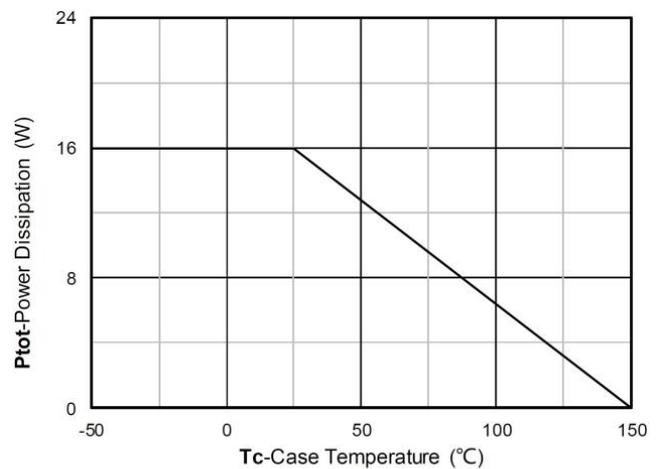
Capacitance Characteristics



Gate Charge

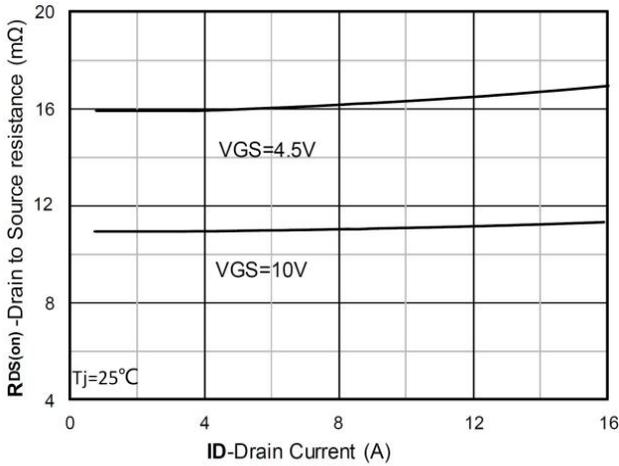


Current dissipation

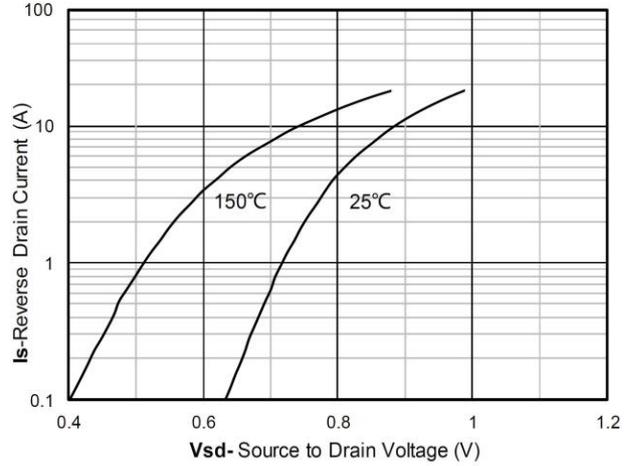


Power dissipation

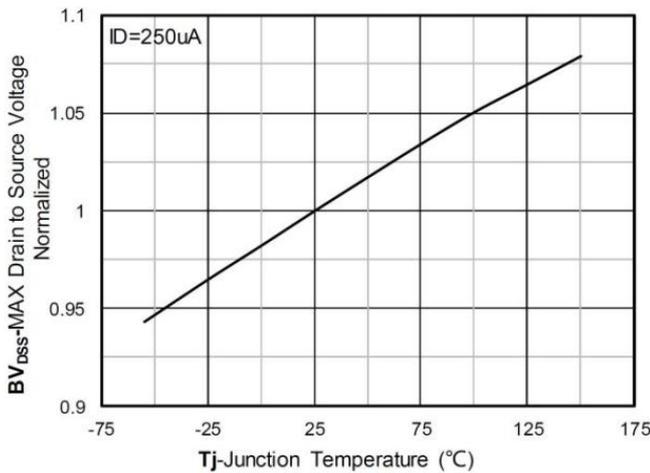
N-Channel Typical Characteristics



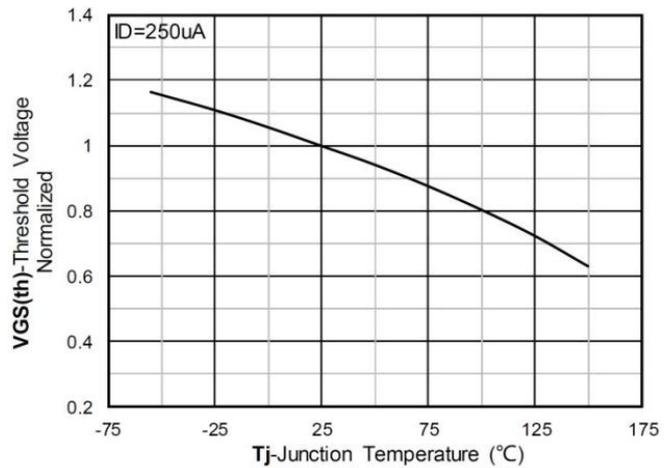
RDS(on) VS Drain Current



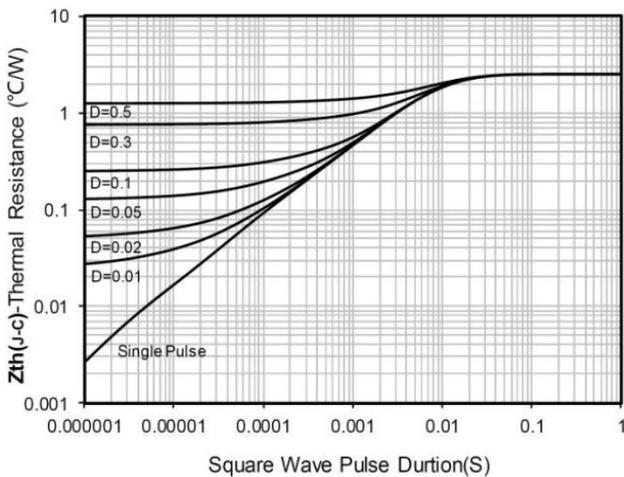
Forward characteristics of reverse diode



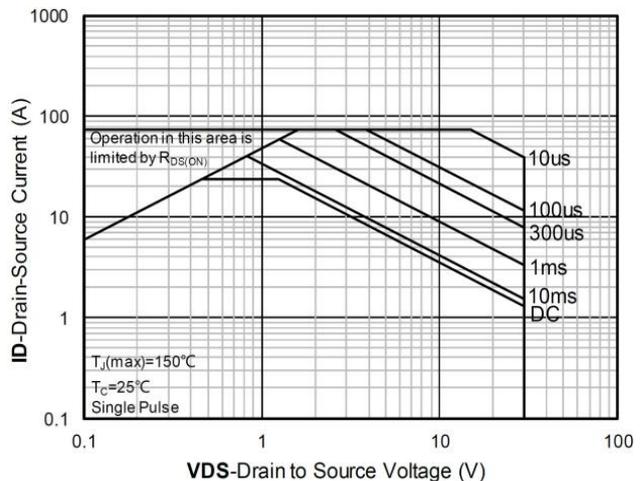
Normalized breakdown voltage



Normalized Threshold voltage

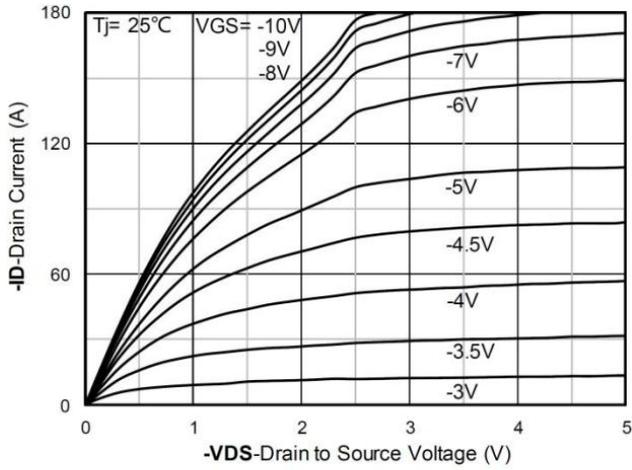


Maximum Transient Thermal Impedance

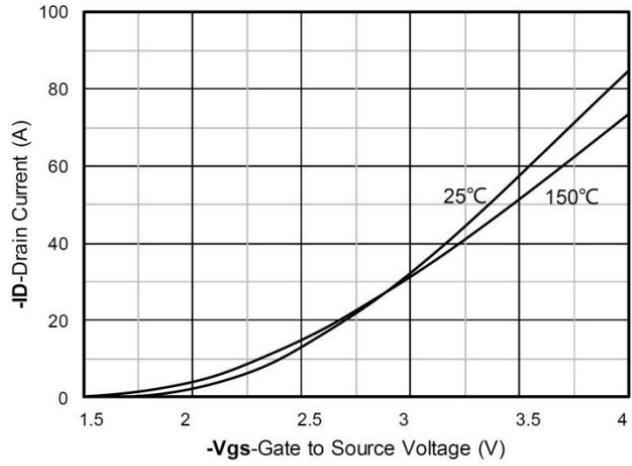


Safe Operation Area

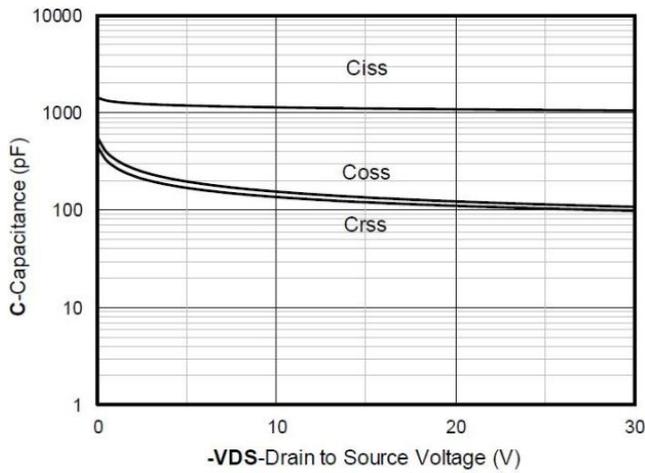
P-Channel Typical Characteristics



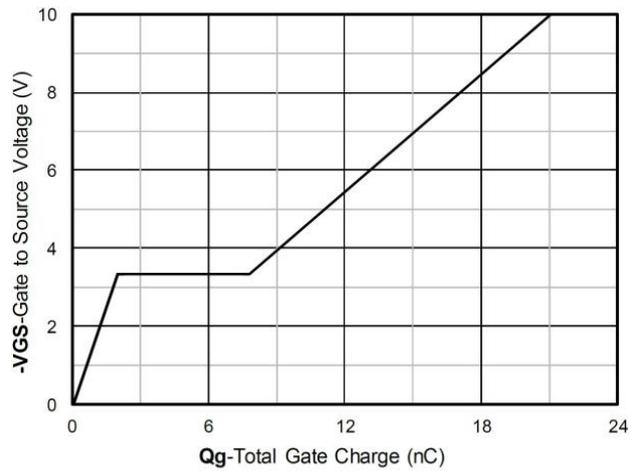
Output Characteristics



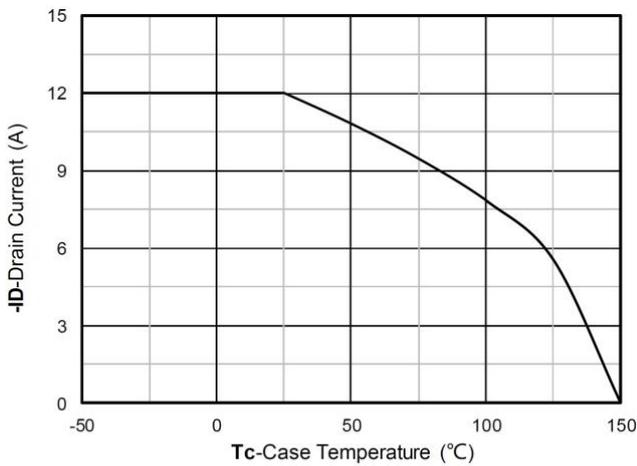
Transfer Characteristics



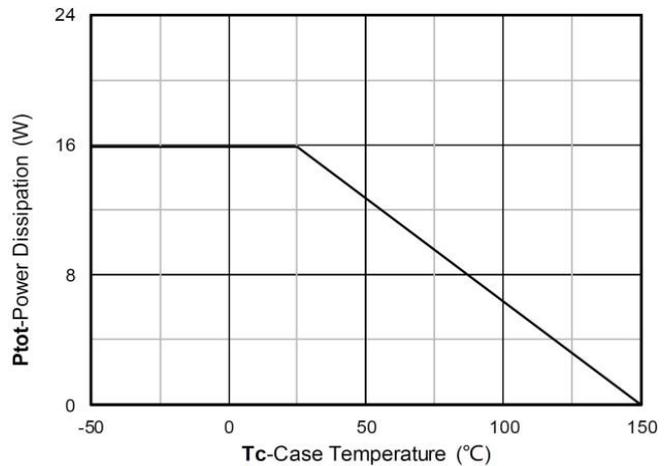
Capacitance Characteristics



Gate Charge

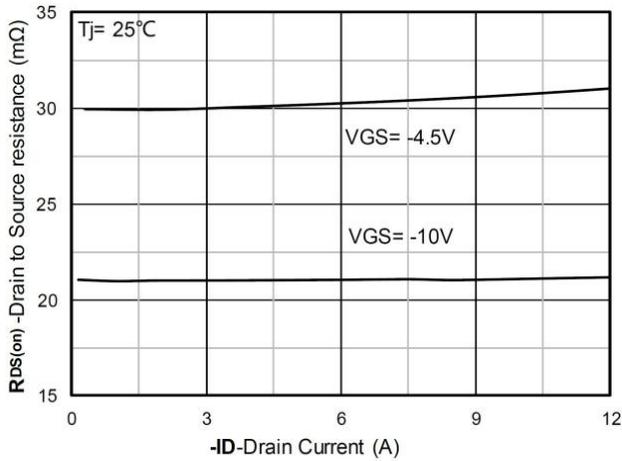


Current dissipation

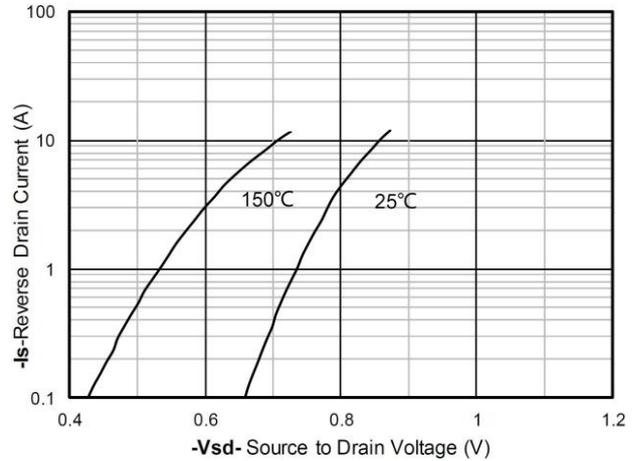


Power dissipation

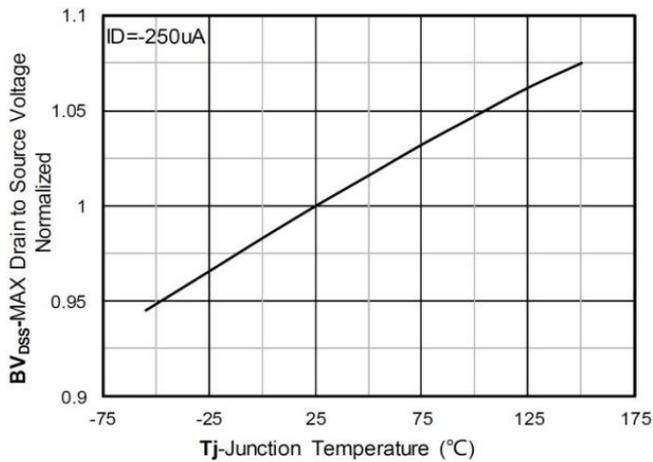
P-Channel Typical Characteristics



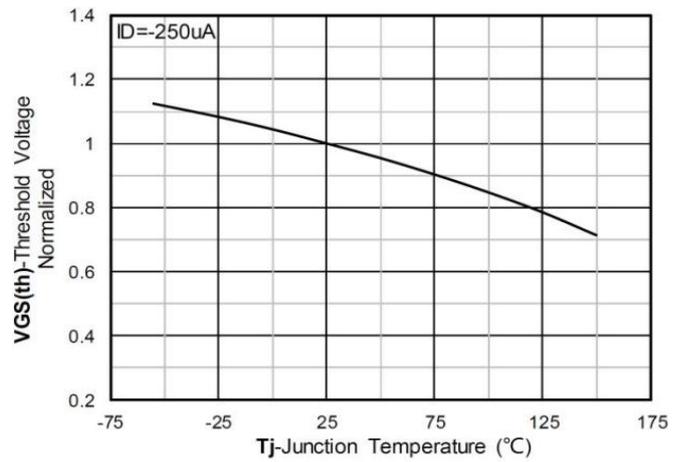
RDS(on) VS Drain Current



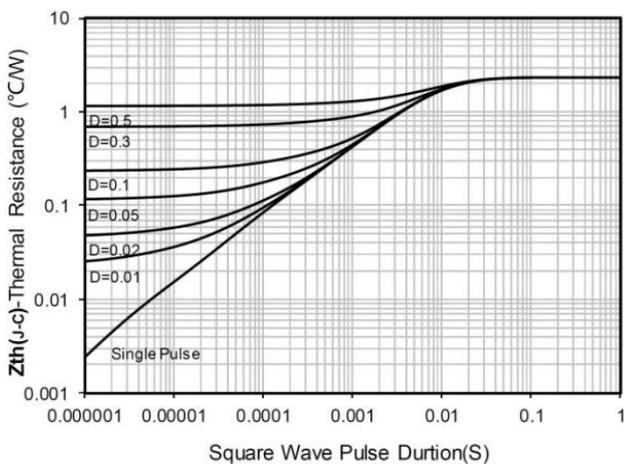
Forward characteristics of reverse diode



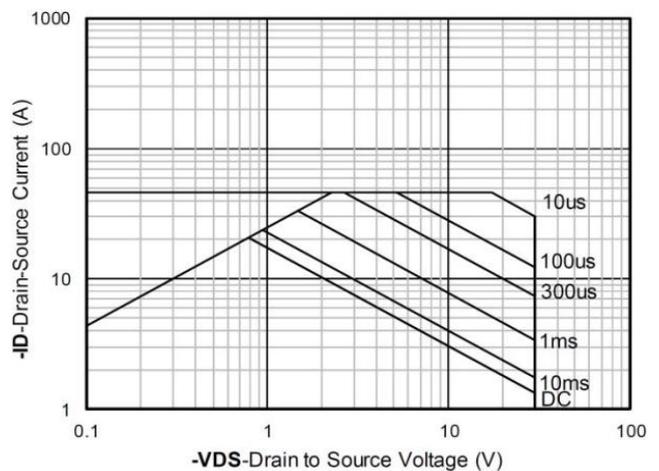
Normalized breakdown voltage



Normalized Threshold voltage

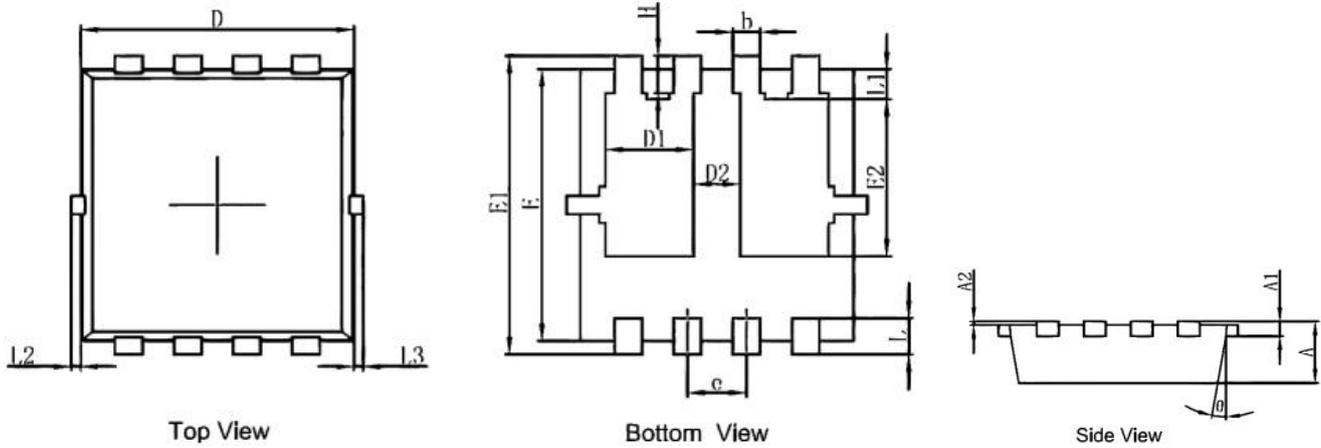


Maximum Transient Thermal Impedance



Safe Operation Area

PDFN3*3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0.000	0.050	0.000	0.002
D	2.900	3.200	0.114	0.126
D1	0.935	1.135	0.037	0.045
D2	0.280	0.480	0.011	0.019
E	2.900	3.100	0.114	0.122
E1	3.100	3.450	0.122	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0.000	0.100	0.000	0.004
L3	0.000	0.100	0.000	0.004
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°