

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	70mΩ@10V	10A
	85mΩ@4.5V	
-100V	230mΩ@-10V	-7A
	240mΩ@-4.5V	

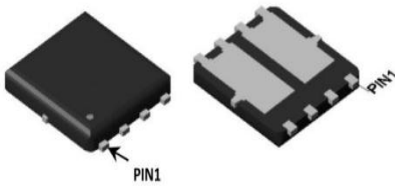
Feature

- TrenchFET Power MOSFET
- Excellent RDS(on) and Low Gate Charge
- Fast Switching Speed

Application

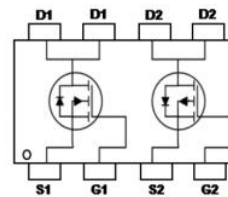
- Motor Control
- DC-DC Converters
- Power Management

Package

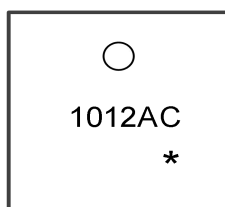


PDFN5X6-8L

Circuit diagram



Marking



1012AC = Device code

***** = Month Code

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

Parameter	Symbol	Value		Unit
		N-Channel	P-Channel	
Drain-Source Voltage	V_{DS}	100	-100	V
Gate-Source Voltage	V_{GS}	± 20	± 20	V
Continuous Drain Current	I_D	10	-7	A
Power Dissipation	P_D	17.8	17.8	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	7		$^{\circ}C/W$
Junction Temperature	T_J	150		$^{\circ}C$
Storage Temperature	T_{STG}	-55~ +150		$^{\circ}C$

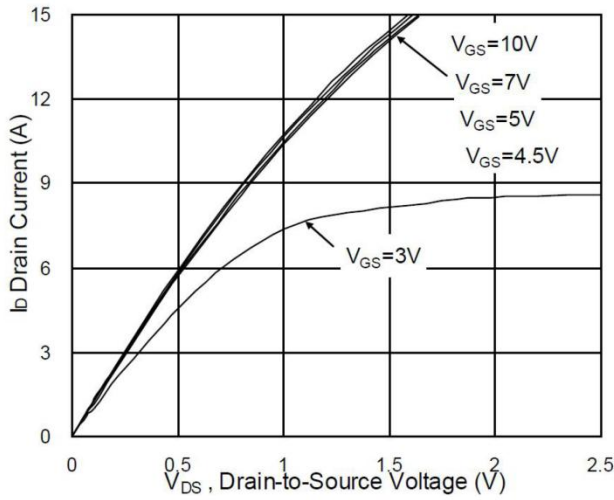
N-Channel Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	100	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 80V, V_{GS} = 0V$	-	-	1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 0.1	μA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.8	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 2A$	-	70	88	m Ω
		$V_{GS} = 4.5V, I_D = 1A$	-	85	115	
Dynamic characteristics						
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V, f=1MHz$	-	1100	-	pF
Output Capacitance	C_{oss}		-	55	-	
Reverse Transfer Capacitance	C_{rss}		-	40	-	
Switching Characteristics						
Total gate charge	Q_g	$V_{DS}=80V, V_{GS}=10V, I_D=2A$	-	12	-	nC
Gate-source charge	Q_{gs}		-	2.9	-	
Gate-drain charge	Q_{gd}		-	1.8	-	
Turn-on delay time	$t_{d(on)}$	$V_{DD}=50V, V_{GS}=10V, R_G=3\Omega, I_D=2A$	-	3.9	-	ns
Turn-on rise time	t_r		-	26	-	
Turn-off delay time	$t_{d(off)}$		-	16.2	-	
Turn-off fall time	t_f		-	8.9	-	
Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=1A, T_J=25^{\circ}C$	-	-	1.2	V

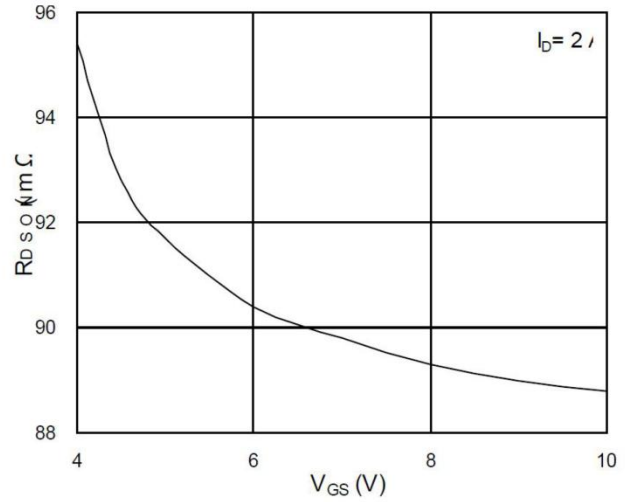
P-Channel Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-100	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} = -80V, V _{GS} = 0V	-	-	-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	-1.8	-2.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} = -10V, I _D = -2A	-	230	290	mΩ
		V _{GS} = -4.5V, I _D = -1A	-	240	320	
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} = -15V, V _{GS} = 0V, f = 1MHz	-	1239	-	pF
Output Capacitance	C _{oss}		-	42	-	
Reverse Transfer Capacitance	C _{rss}		-	29	-	
Switching Characteristics						
Turn-on delay time	t _{d(on)}	V _{DD} = -50V, I _D = -2A, V _{GS} = -10V, R _{GEN} = 10Ω	-	9.1	-	ns
Turn-on rise time	t _r		-	14.8	-	
Turn-off delay time	t _{d(off)}		-	57	-	
Turn-off fall time	t _f		-	14	-	
Total gate charge	Q _g	V _{DS} = -60V, V _{GS} = -10V, I _D = -2A	-	25	-	nC
Gate-source charge	Q _{gs}		-	5	-	
Gate-drain charge	Q _{gd}		-	7	-	
Source-Drain Diode Characteristics						
Body Diode Voltage	V _{SD}	I _S = -1A, V _{GS} = 0V	-	-	-1.2	V

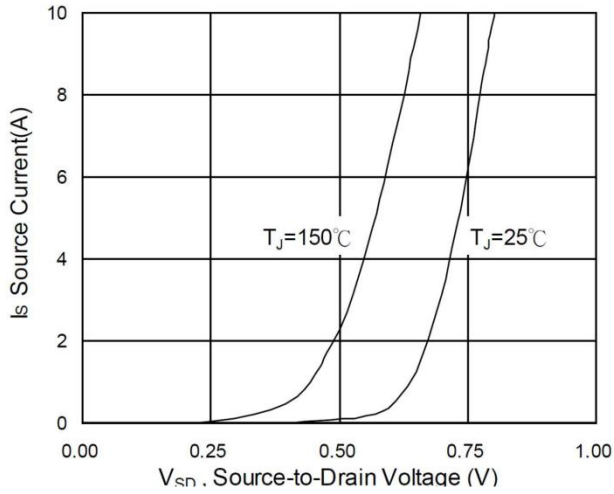
N-Channel Typical Characteristics



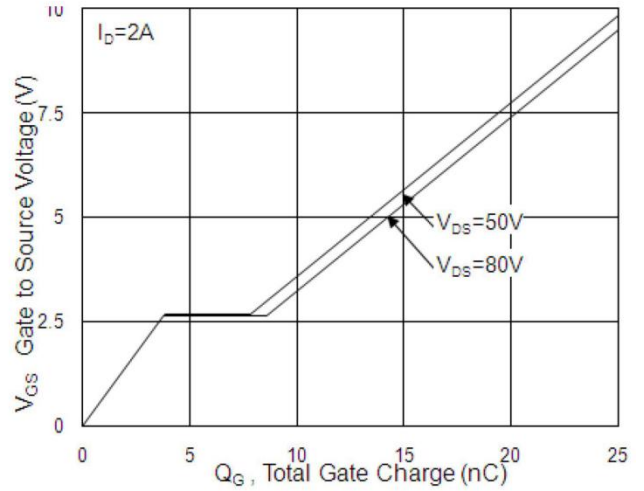
Typical Output Characteristics



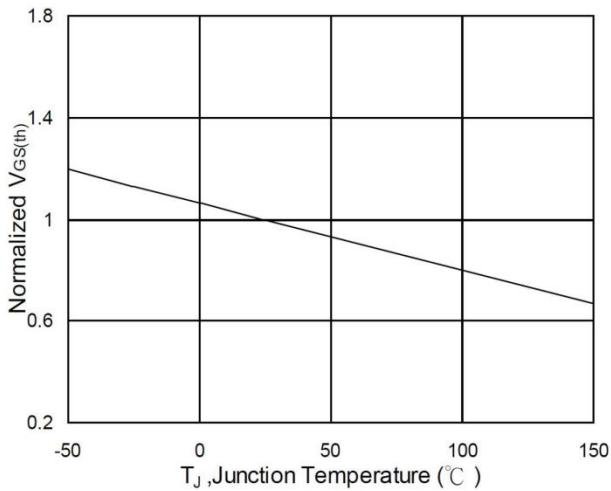
On-Resistance vs. Gate-Source



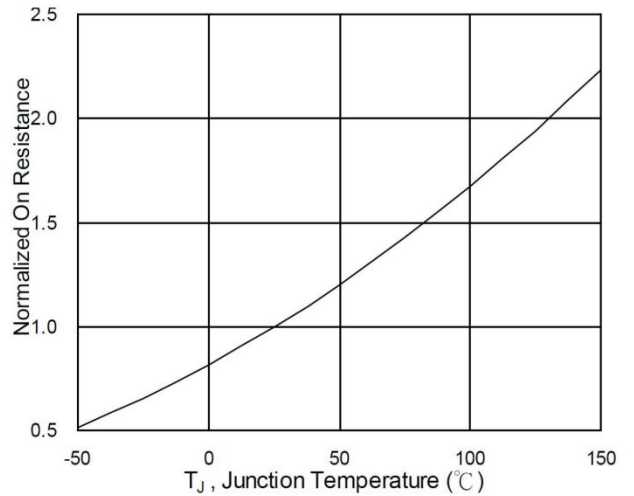
Forward Characteristics Of Reverse



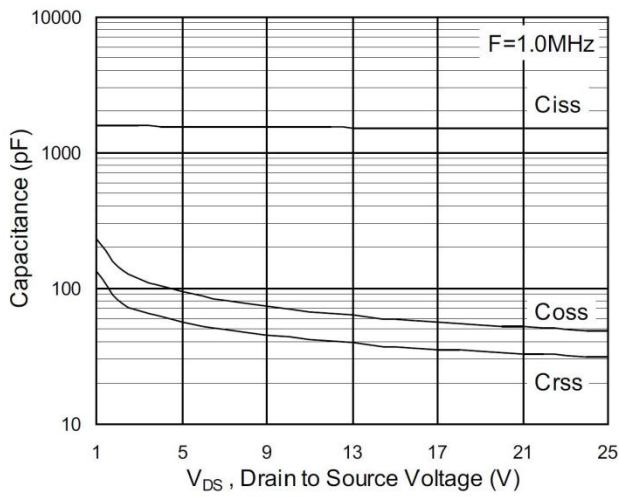
Gate-Charge Characteristics



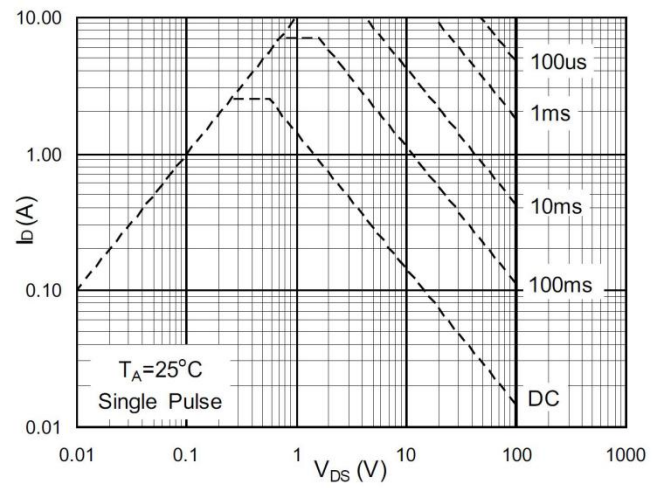
Normalized VGS(th) vs. TJ



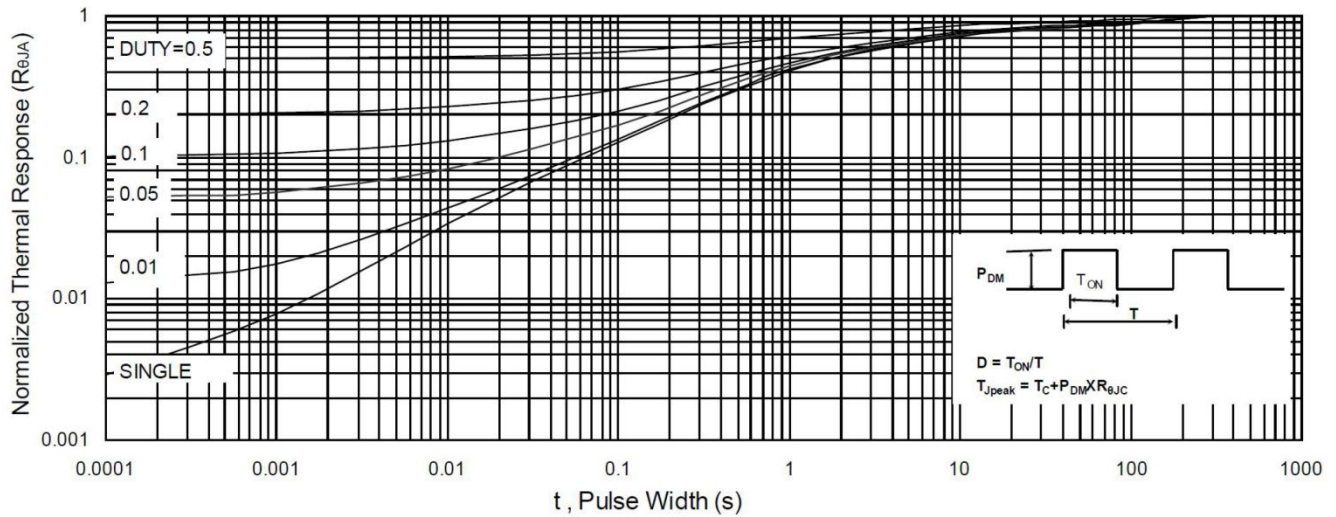
Normalized RDS(on) vs. TJ



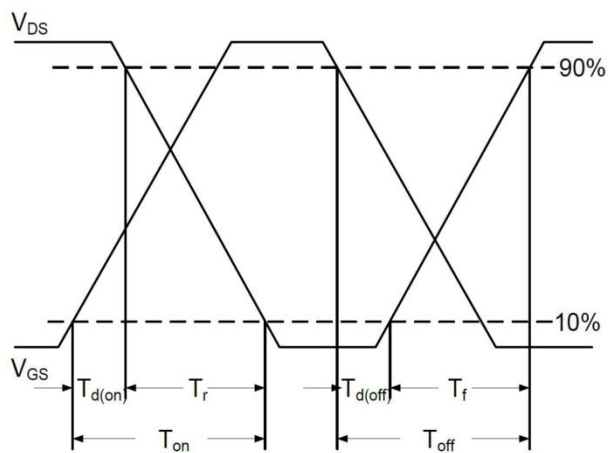
Capacitance



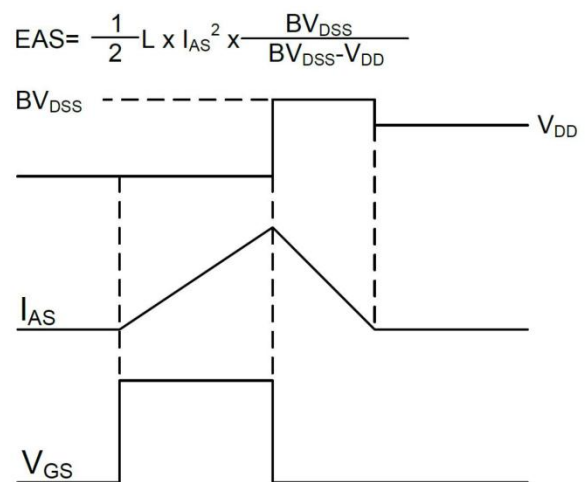
Safe Operating Area



Normalized Maximum Transient Thermal Impedance

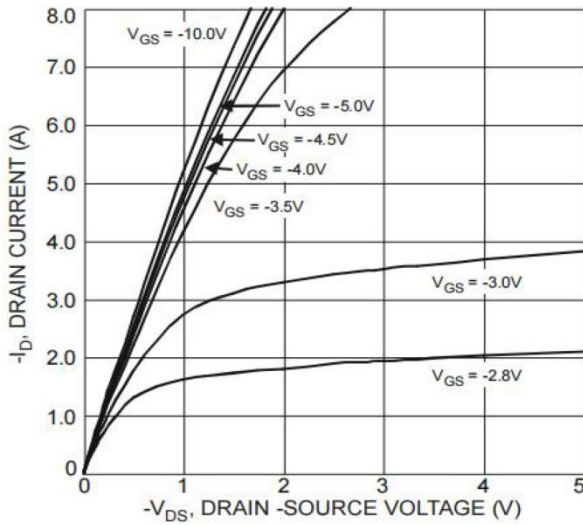


Switching Time Waveform

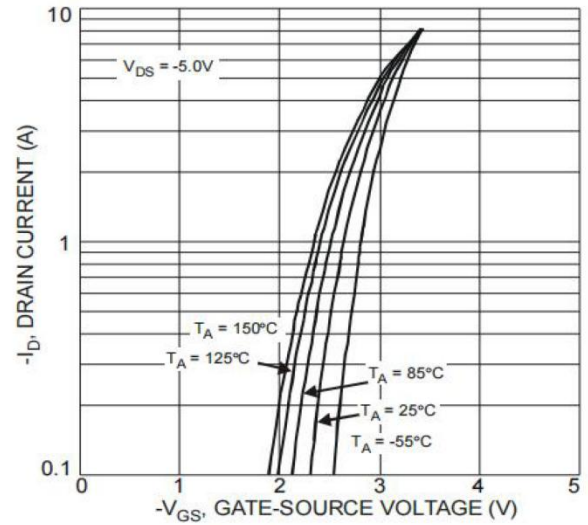


Unclamped Inductive Switching Waveform

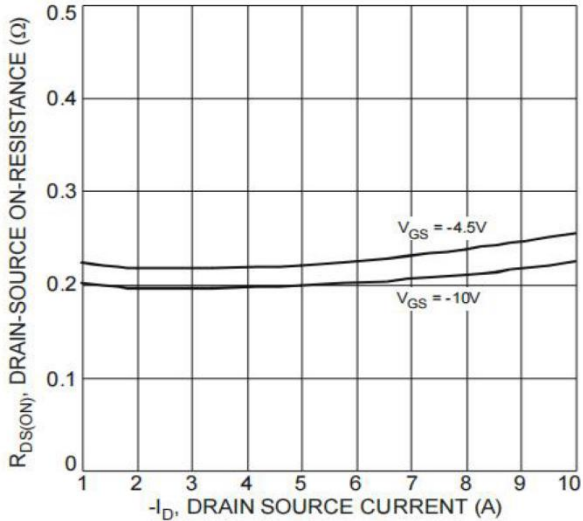
P-Channel Typical Characteristics



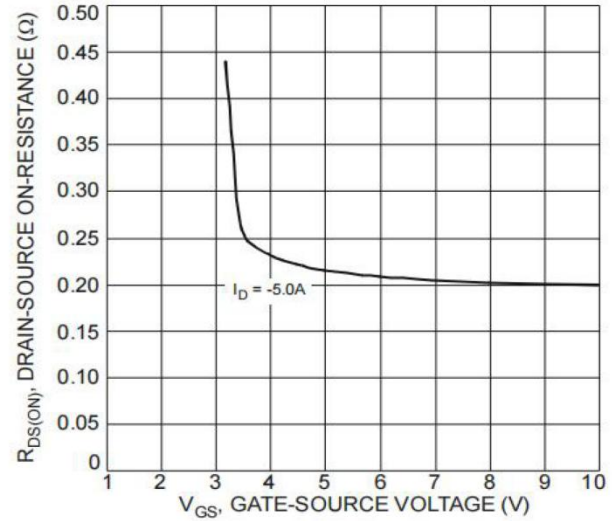
Typical Output Characteristics



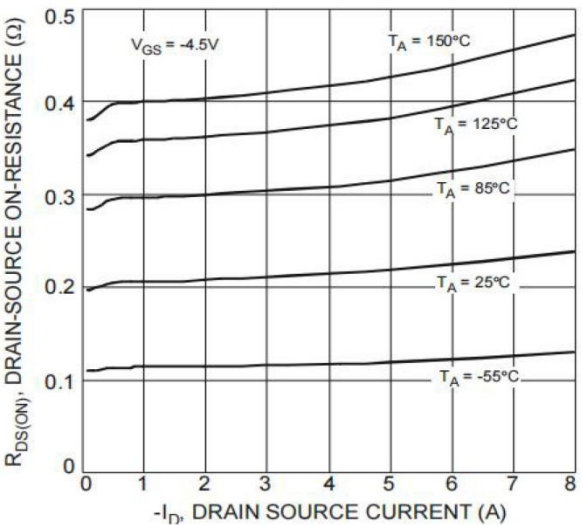
Transfer Characteristics



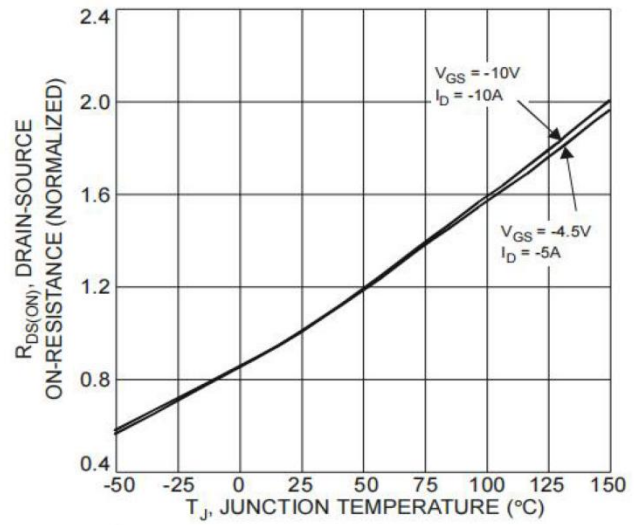
On-Resistance vs. Drain Current and Gate Voltage



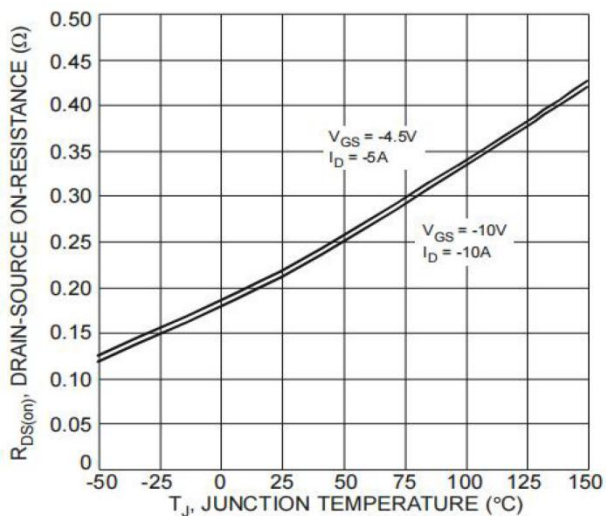
Drain-Source On-Resistance vs. Gate-Source Voltage



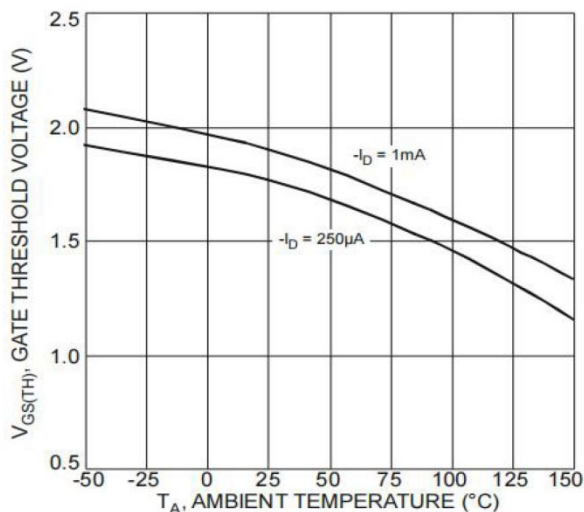
On-Resistance vs. Drain Current and Temperature



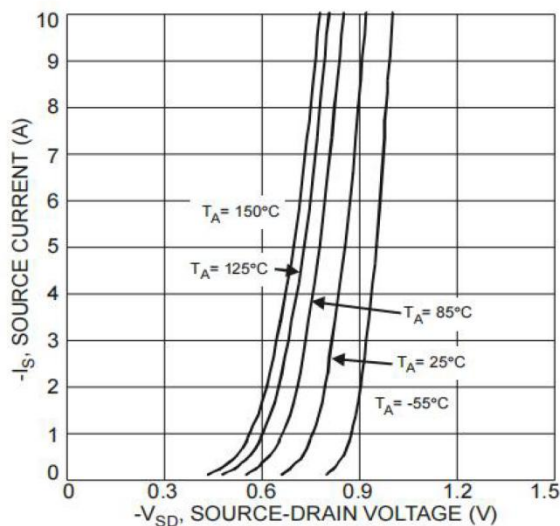
On-Resistance Variation with Temperature



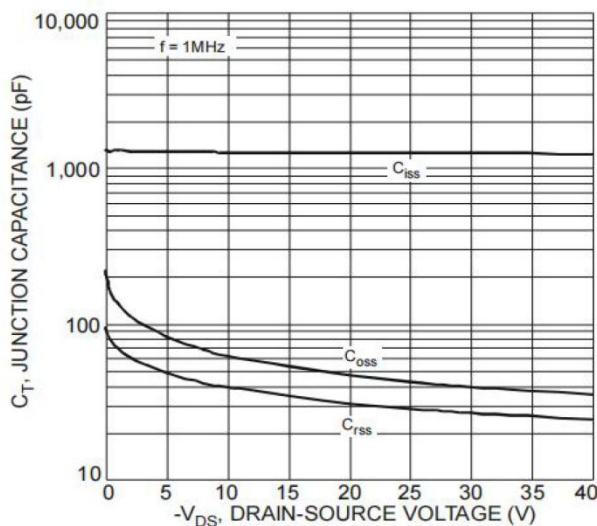
On-Resistance Variation with Temperature



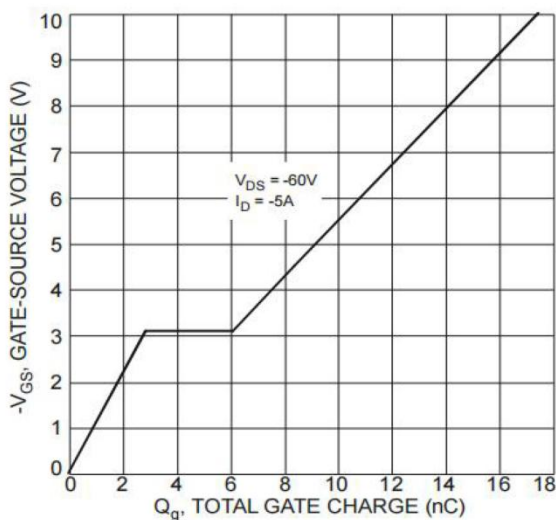
Gate Threshold Variation vs. Ambient Temperature



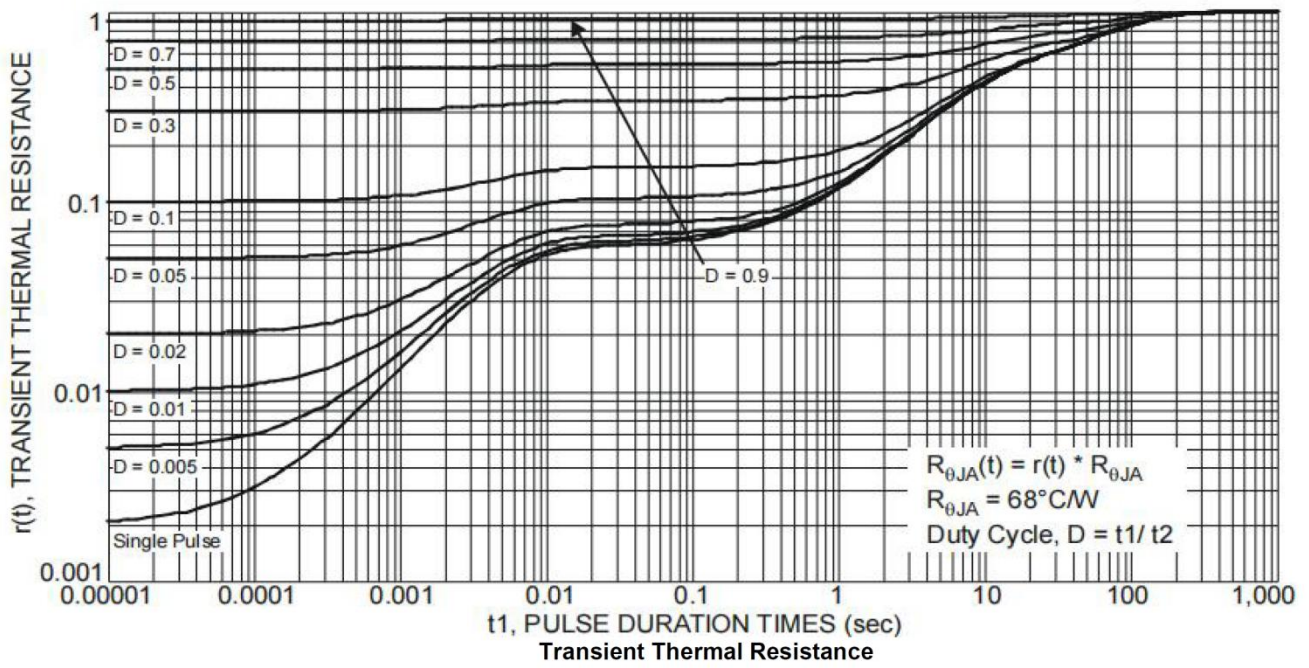
Diode Forward Voltage vs. Current



Typical Junction Capacitance

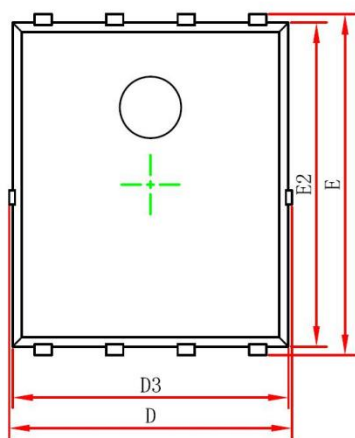


Gate-Charge Characteristics

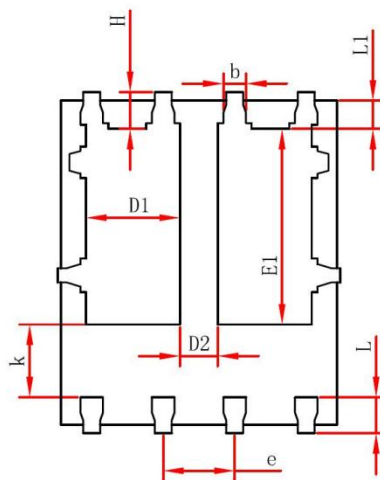




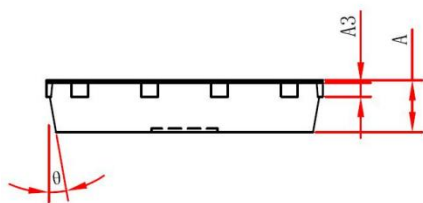
PDFN5X6-8L Package Information



Top View
[顶视图]



Bottom View
[背视图]



Side View
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254 REF.		0.010REF.	
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	1.270TYP.		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°

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