Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	11mΩ@10V	24A
	17mΩ@4.5V	
-30V	20mΩ@-10V	-21A
	29mΩ@-4.5V	

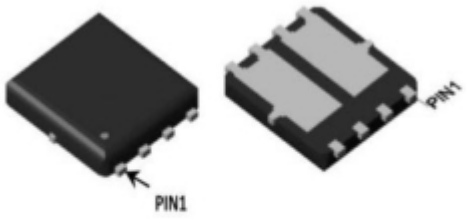
Feature

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

Applications

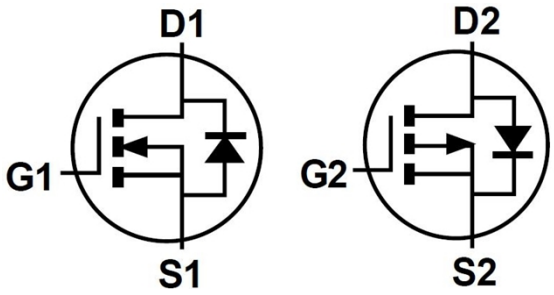
- Motor Control
- Inverters

Package

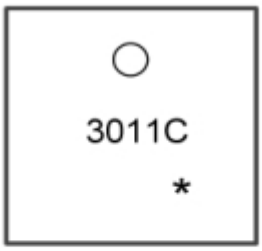


PDFN5×6-8L

Circuit diagram



Marking



3011C = Device code

*** = Month Code**

Absolute maximum ratings

(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value		Unit
		N-Channel	P-Channel	
Drain-Source Voltage	V_{DS}	30	-30	V
Gate-Source Voltage	V_{GS}	±20	±20	V
Continuous Drain Current(t≤10s)	I_D	24	-21	A
Single Pulse Avalanche Energy	E_{AS}	129	169	mJ
Power Dissipation(t≤10s)	P_D	26	22	W
Thermal Resistance from Junction to Ambient(t≤10s)	$R_{\theta JA}$	4.81	5.68	℃/W
Junction Temperature	T_J	150		℃
Storage Temperature	T_{STG}	-55~ +150		℃

N-Channel Electrical characteristics

(T_A=25℃, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$BV_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =24V, V_{GS} = 0V			1	uA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	uA
Gate threshold voltage (1)	$V_{GS(th)}$	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 =8A		11	15	mΩ
		V_{GS} =4.5V, I_D =6A		17	23	
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V, f=1MHz		940		pF
Output capacitance	C_{oss}			131		
Reverse transfer capacitance	C_{rss}			109		
Switching Characteristics						
Total gate charge	Q_g	V_{DS} =15V, V_{GS} =4.5V, I_D =8A		9.63		nC
Gate-source charge	Q_{gs}			3.88		
Gate-drain charge	Q_{gd}			3.44		
Turn-on Delay Time	$T_{d(on)}$	V_{DD}=15V, V_{GS}=4.5V , R_G=1.5, I_D =8A		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						
Body Diode Voltage	V_{SD}	I_S=1A, V_{GS} = 0V			1.2	V

Notes:

1.Repetitive Rating: Pulse width limited by maximum junction temperature.

2.EAS data shows Max. rating . The test condition is V_{DD}=15V,V_{GS}=10V,L=0.5mH

3.Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

4.Guaranteed by design, not subject to production

P-Channel Electrical characteristics

(T_A=25℃, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$BV_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-24V, V_{GS} = 0V			1	uA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	uA
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 =-8A		20	24	mΩ
		V_{GS} =-4.5V, I_D =-6A		29	38	
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{DS}=-15V, V_{GS}=0V, f=1MHz		1600		pF
Output capacitance	C_{oss}			350		
Reverse transfer capacitance	C_{rss}			300		
Switching Characteristics						
Total gate charge	Q_g	V_{DS} =-15V, V_{GS} =-4.5V, I_D =-8A		30		nS
Gate-source charge	Q_{gs}			5.5		
Gate-drain charge	Q_{gd}			8		
Turn-on Delay Time	$T_{d(on)}$	V_{DS}=-15V, I_D =-1A, V_{GS}=-10V, R_{GEN} =6Ω		10		nS
Turn-on Rise Time	T_r			15		
Turn-Off Delay Time	$T_{d(off)}$			110		
Turn-Off Fall Time	t_f			70		
Source-Drain Diode Characteristics						
Body Diode Voltage	V_{SD}	I_S=-1A, V_{GS} = 0V			-1.2	V

Notes:

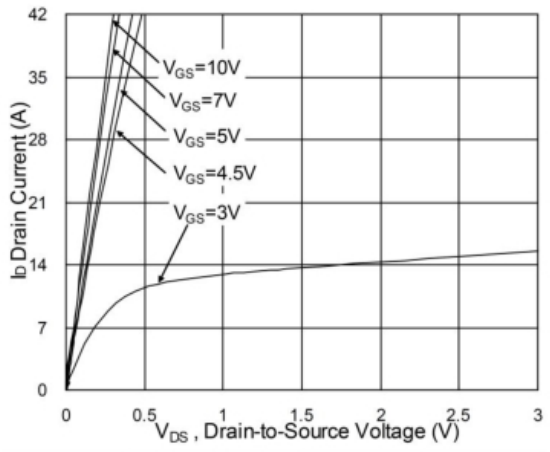
1.Repetitive Rating: Pulse width limited by maximum junction temperature.

2.EAS data shows Max. rating . The test condition is V_{DD}=-15V,V_{GS}=-10V,L=0.5mH

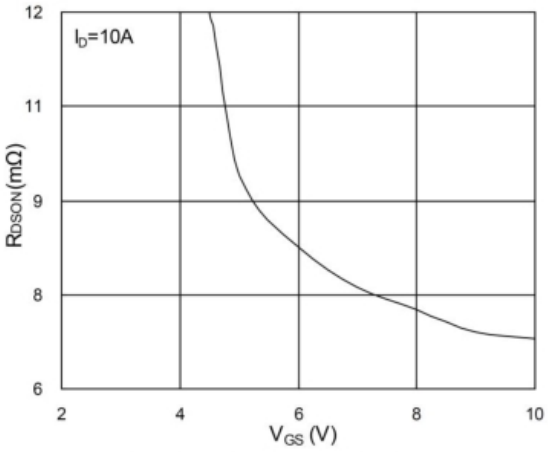
3.Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

4.Guaranteed by design, not subject to production

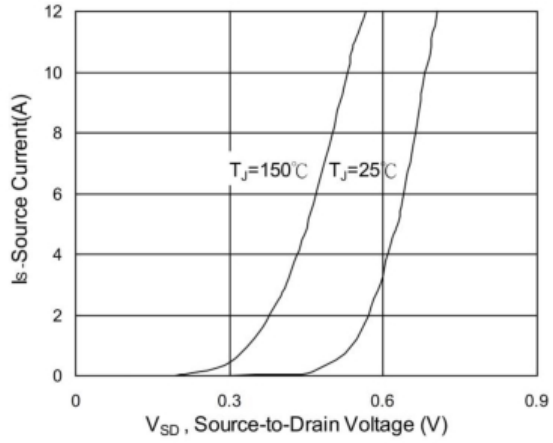
N-Channel Typical Characteristics



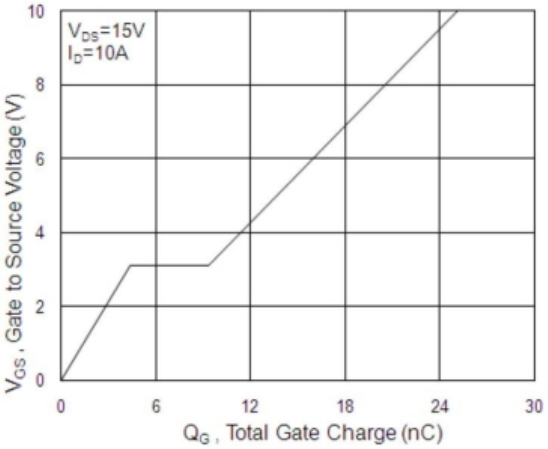
Typical Output Characteristics



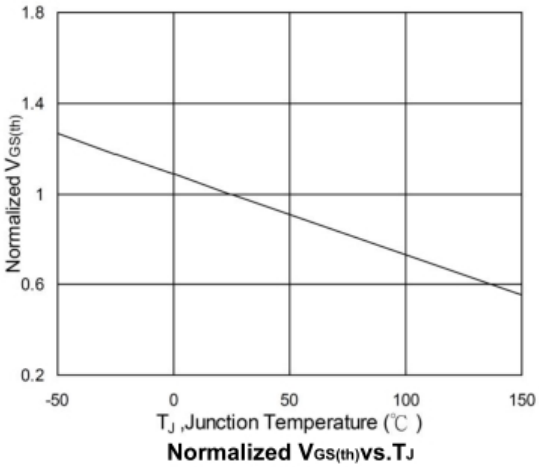
On-Resistance vs.Gate-Source



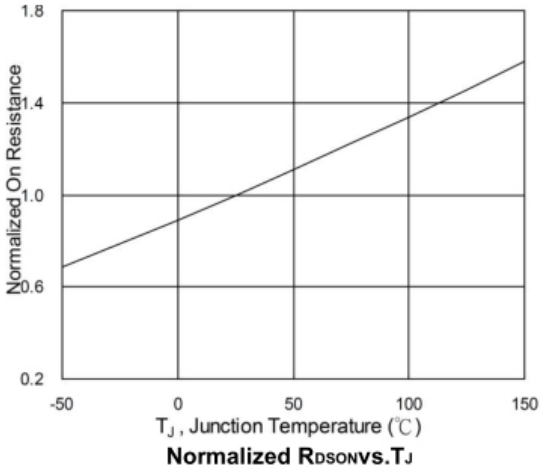
Forward Characteristics of reverse



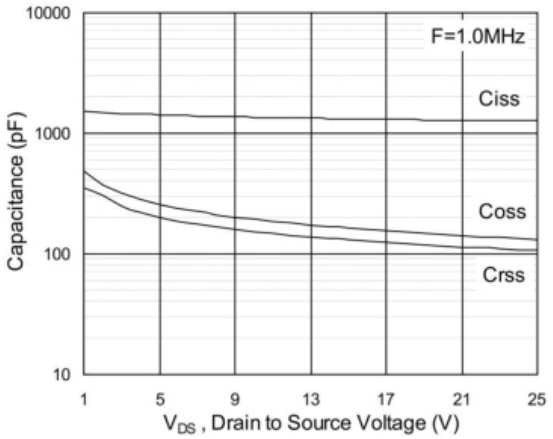
Gate-Charge Characteristics



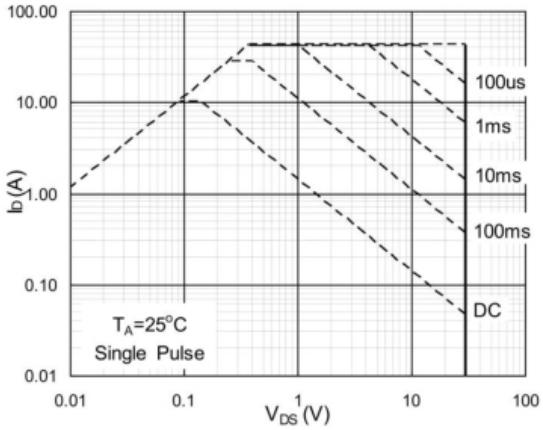
Normalized $V_{GS(th)}$vs.T_J



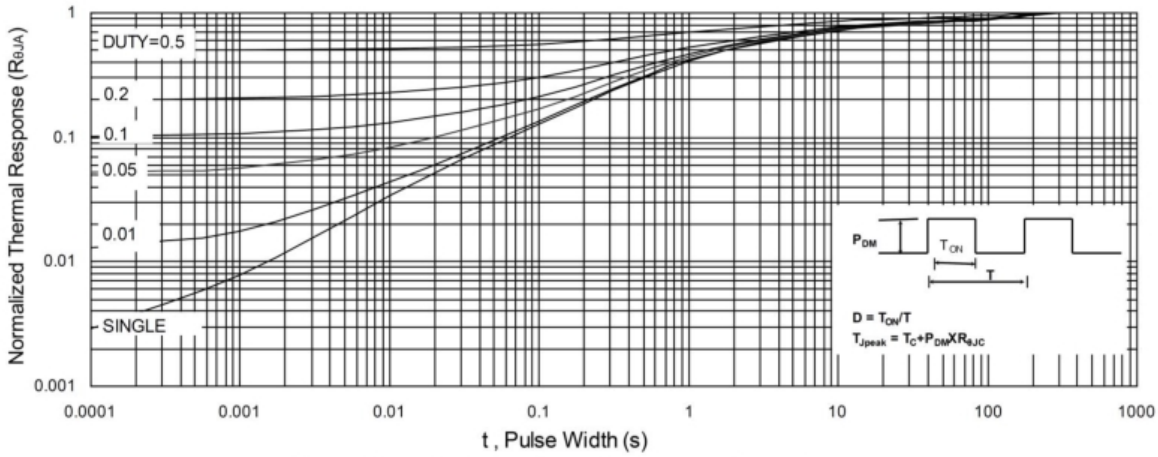
Normalized R_{DSON}vs.T_J



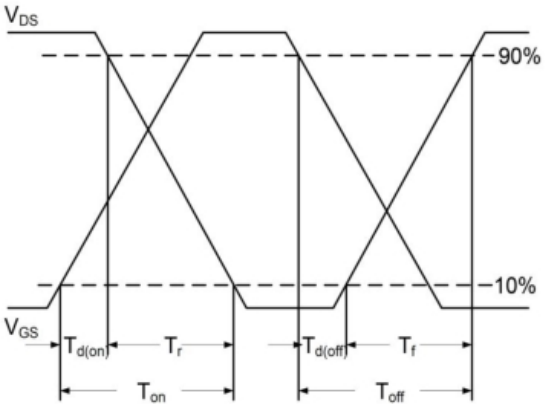
Capacitance



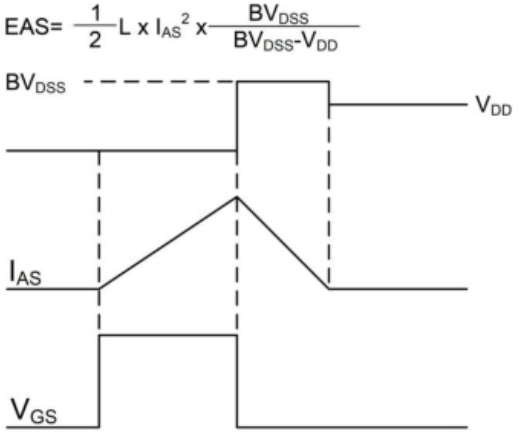
Safe Operating Area



Normalized Maximum Transient Thermal Impedance

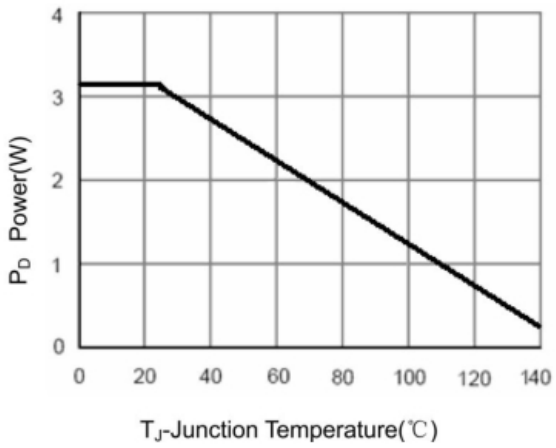


Switching Time Waveform

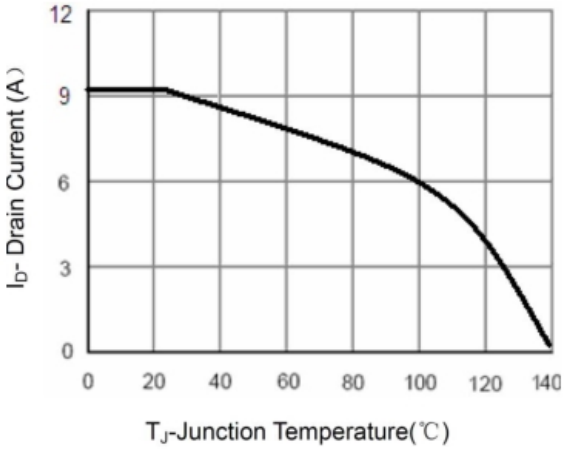


Unclamped Inductive Switching Waveform

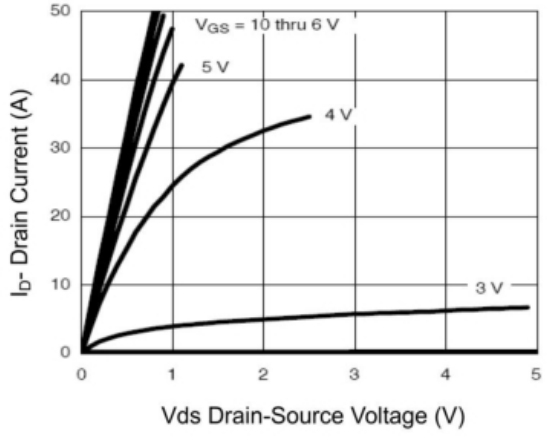
P-Channel Typical Characteristics



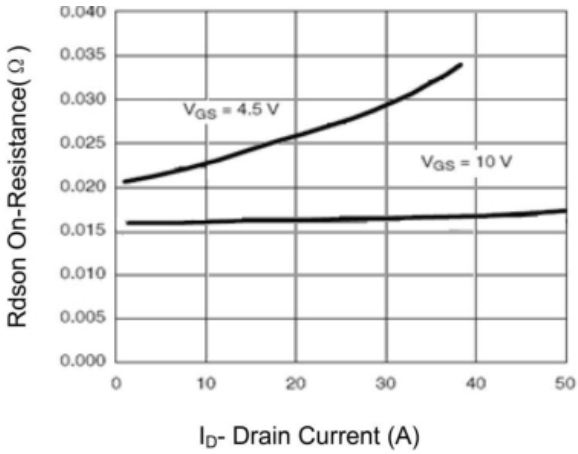
Power Dissipation



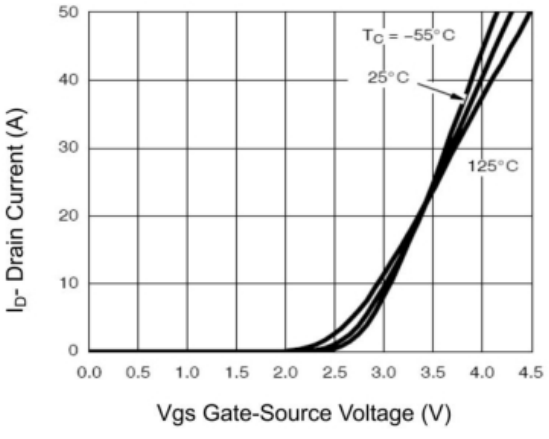
Drain Current



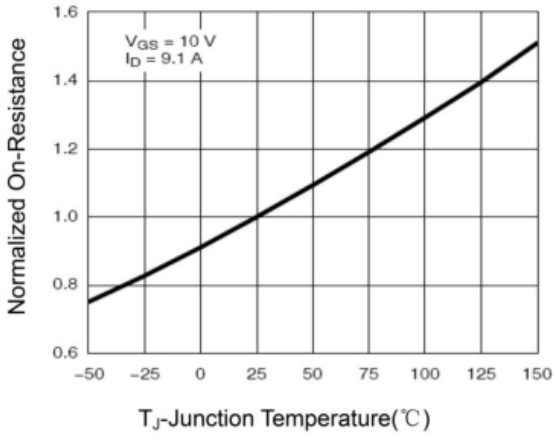
Output Characteristics



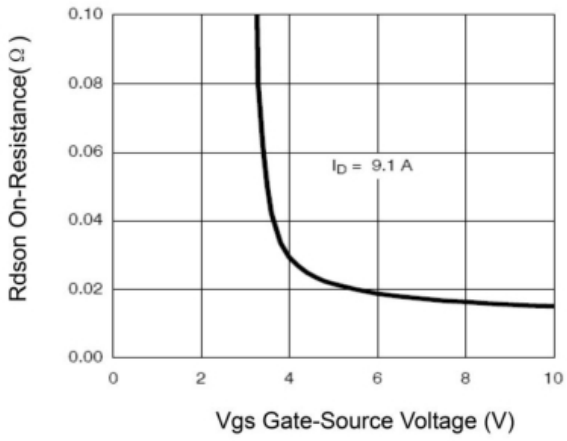
Drain-Source On-Resistance



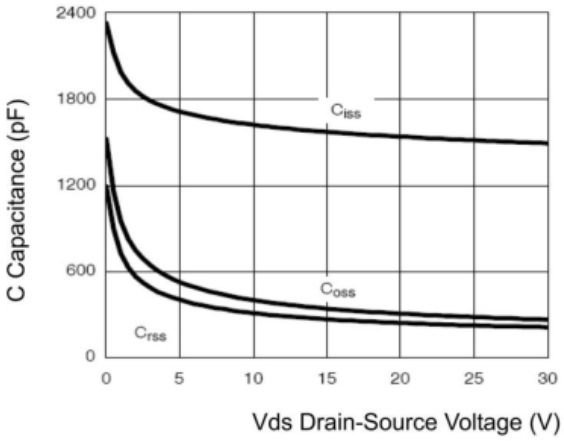
Transfer Characteristics



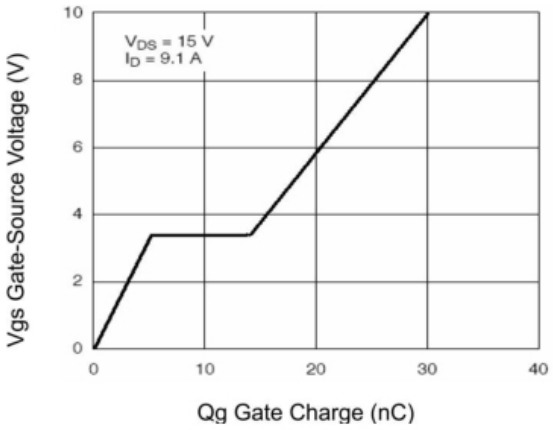
Drain-Source On-Resistance



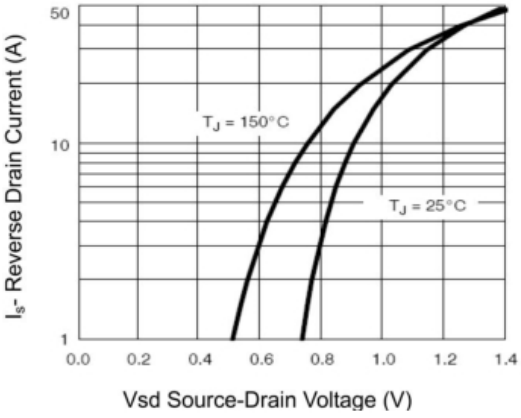
Rdson vs Vgs



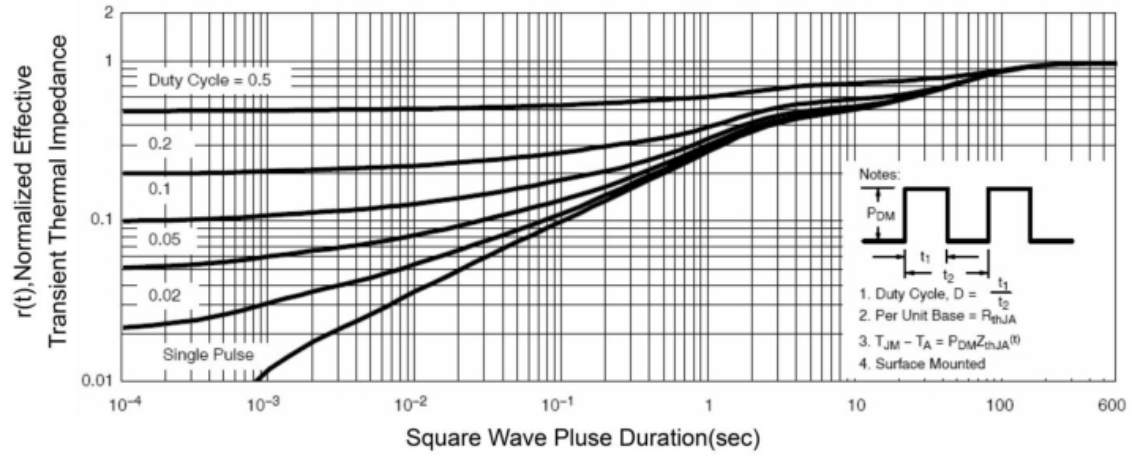
Capacitance vs Vds



Gate Charge

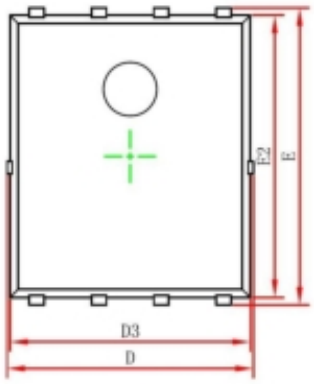


Source- Drain Diode Forward

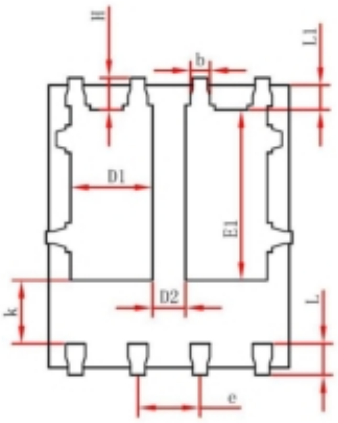


Normalized Maximum Transient Thermal Impedance

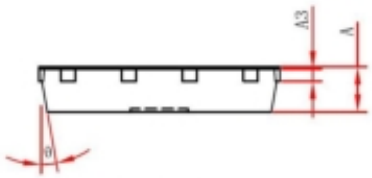
PDFN5X6-8L-A Package Information



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°