

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	11m Ω @10V	18A
	17m Ω @4.5V	
-30V	20m Ω @-10V	-16A
	29m Ω @-4.5V	

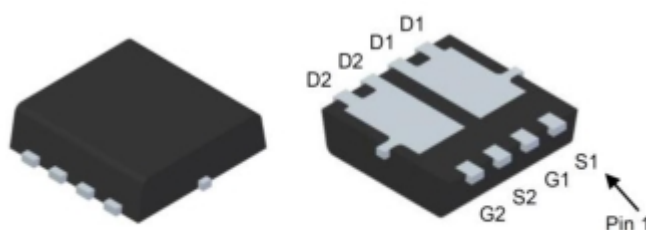
Feature

- TrenchFET Power MOSFET
- Excellent $R_{DS(on)}$ and Low Gate Charge
- Fast Switching Speed

Applications

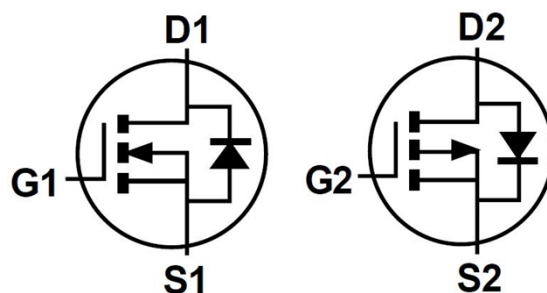
- Motor Control
- Inverters

Package

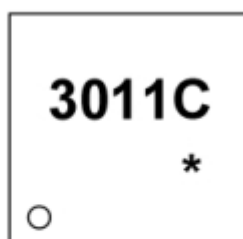


PDFNWB3.3×3.3-8L-B

Circuit diagram



Marking



3011C = Device code

*** = Month Code**

Absolute maximum ratings

($T_a=25^{\circ}\text{C}$ 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($t \leq 10\text{s}$)	I_D	18	-16	A
Power Dissipation($t \leq 10\text{s}$)	P_D	22	18	W
Thermal Resistance from Junction to Ambient($t \leq 10\text{s}$)	$R_{\theta JA}$	5.68	6.94	$^{\circ}\text{C/W}$
Junction Temperature	T_J	150		$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55~ +150		$^{\circ}\text{C}$

N-Channel Electrical characteristics

(T_A=25°C, unless otherwise noted)

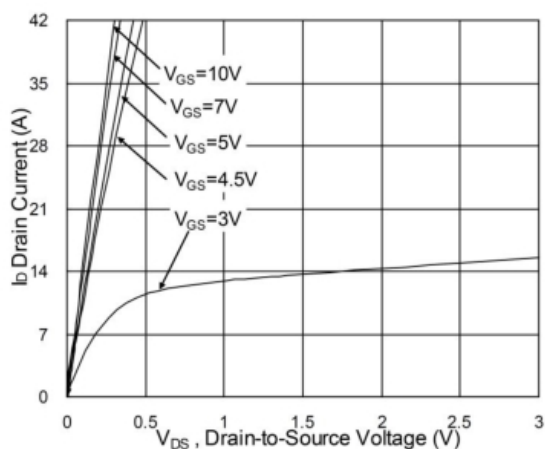
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	BV (BR)DSS	V _{GS} = 0V, I _D =250μA	30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =24V, V _{GS} = 0V			1	uA
Gate-body leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} = 0V			±100	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 _{DS} =15V, V _{GS} =10V , 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

P-Channel Electrical characteristics

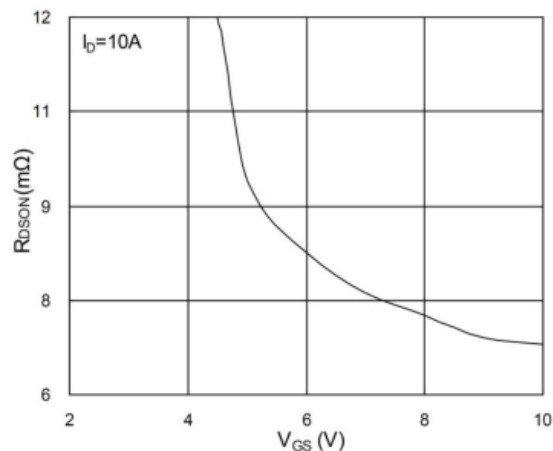
(T_A=25°C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$BV_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -24V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	μA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1	-1.5	-2.5	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -8A$		20	24	m Ω
		$V_{GS} = -4.5V, I_D = -6A$		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		nC
Gate-source charge	Q_{gs}			5.5		
Gate-drain charge	Q_{gd}			8		
Turn-on Delay Time	$T_{d(on)}$	$V_{DS} = -15V, I_D = -1A,$ $V_{GS} = -10V, R_{GEN} = 6\Omega$		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

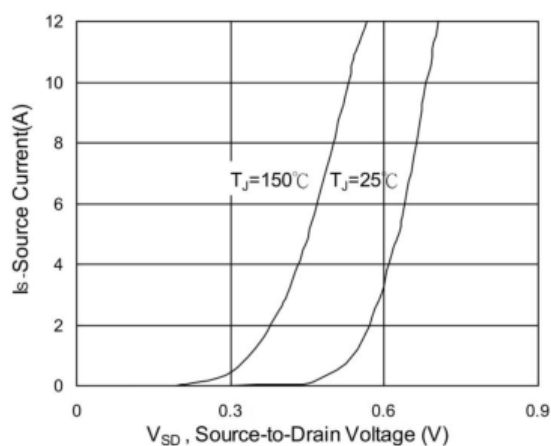
N-Channel Typical Characteristics



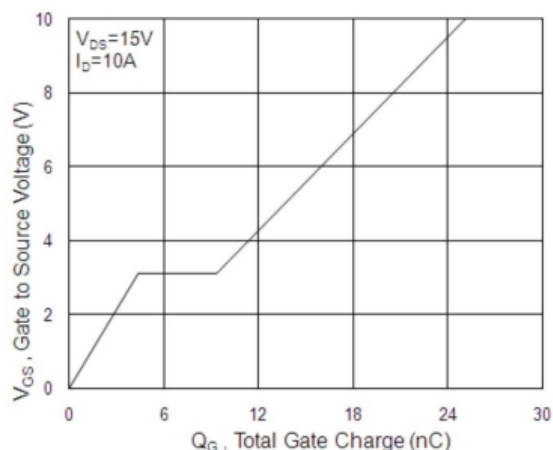
Typical Output Characteristics



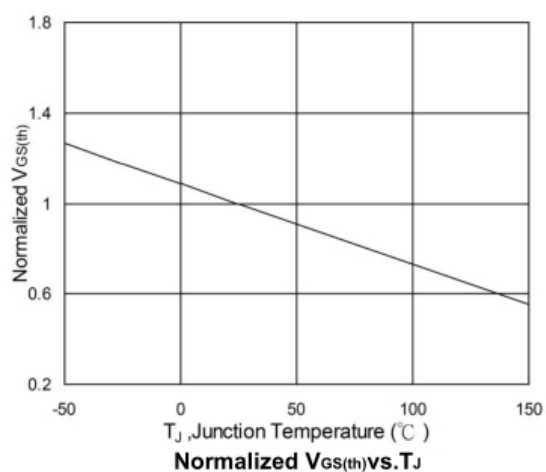
On-Resistance vs. Gate-Source



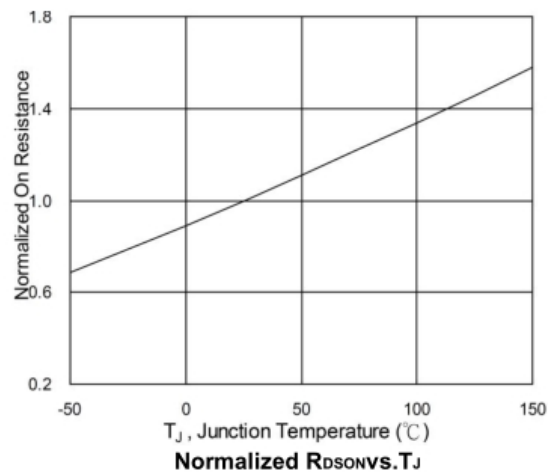
Forward Characteristics of reverse



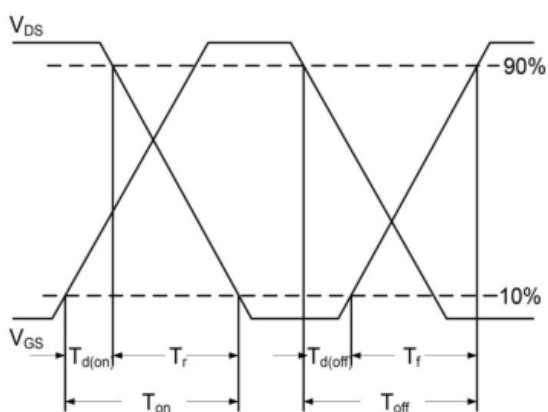
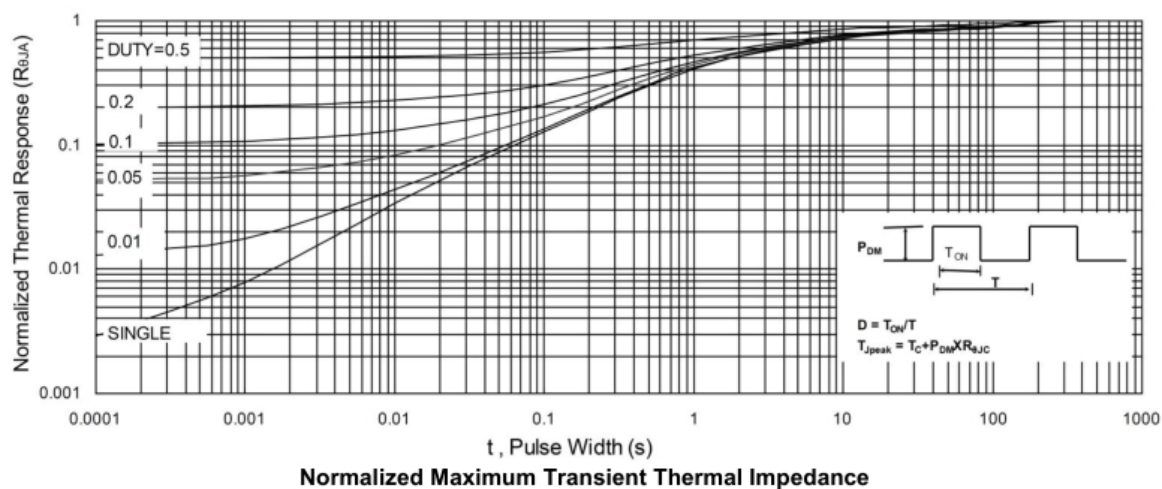
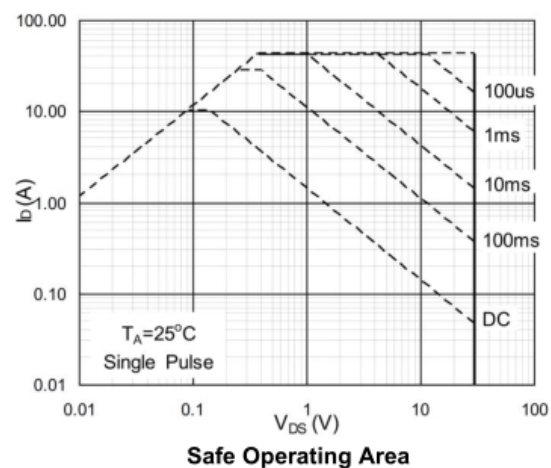
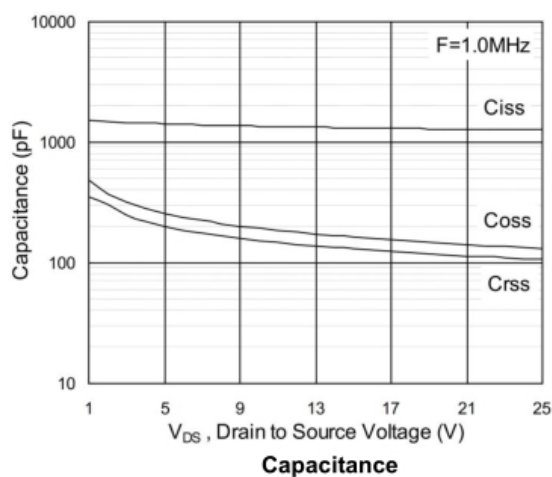
Gate-Charge Characteristics



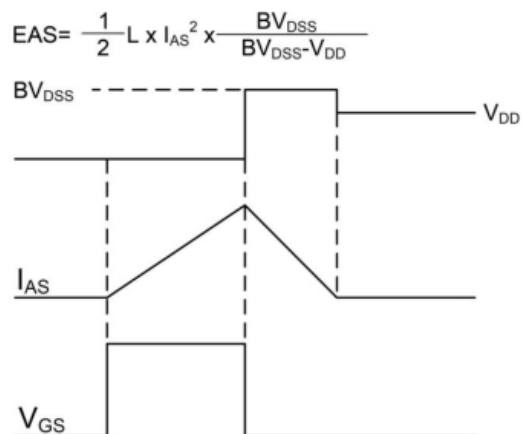
Normalized $V_{GS(th)}$ vs. T_J



Normalized $R_{DS(on)}$ vs. T_J

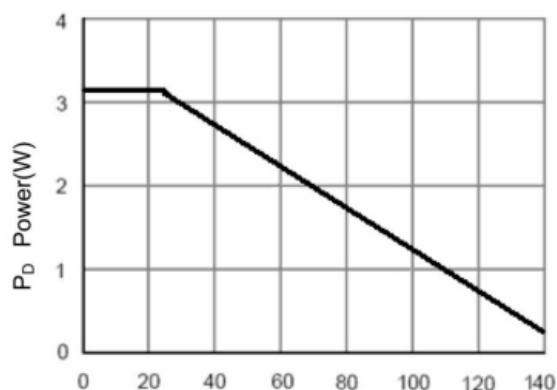


Switching Time Waveform

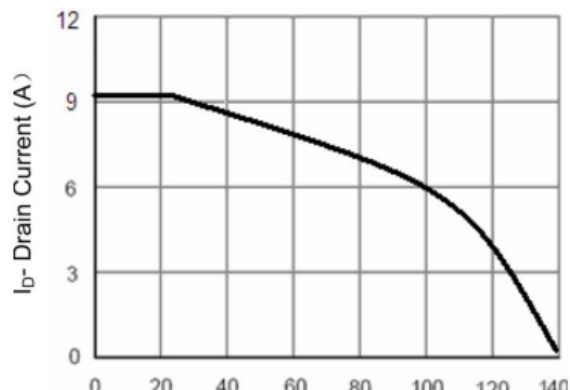


Unclamped Inductive Switching Waveform

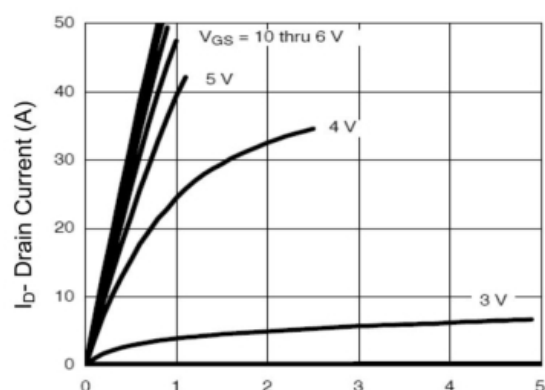
P-Channel Typical Characteristics


T_J-Junction Temperature(°C)

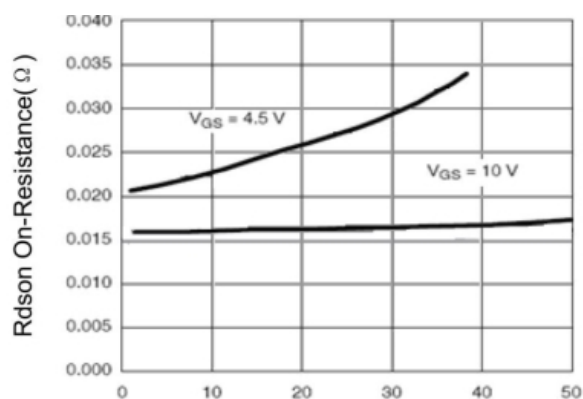
Power Dissipation


T_J-Junction Temperature(°C)

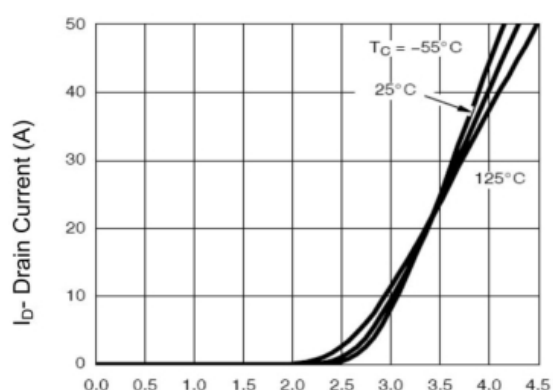
Drain Current


V_{DS} Drain-Source Voltage (V)

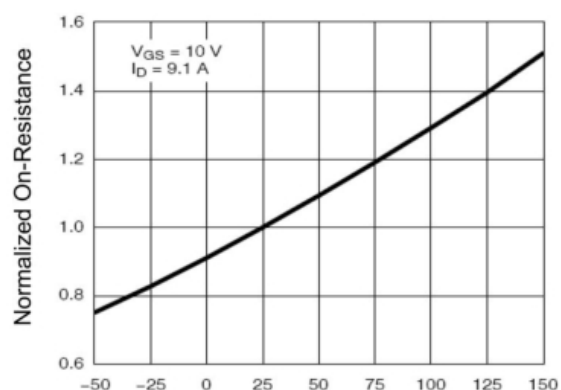
Output Characteristics


I_D- Drain Current (A)

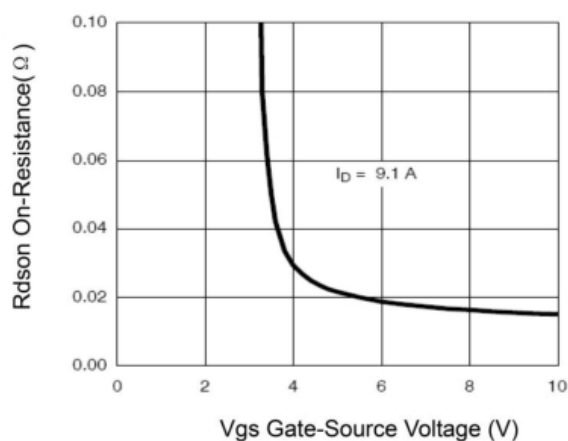
Drain-Source On-Resistance


V_{GS} Gate-Source Voltage (V)

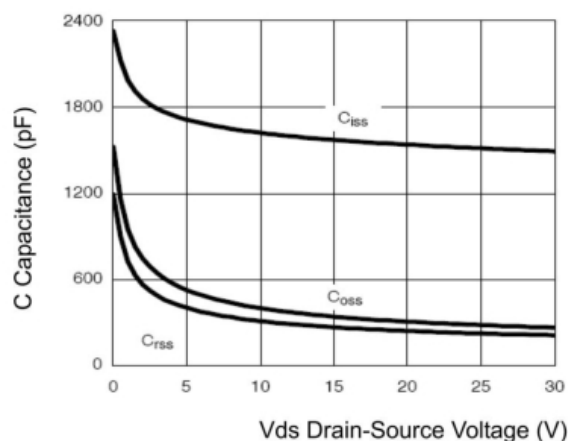
Transfer Characteristics


T_J-Junction Temperature(°C)

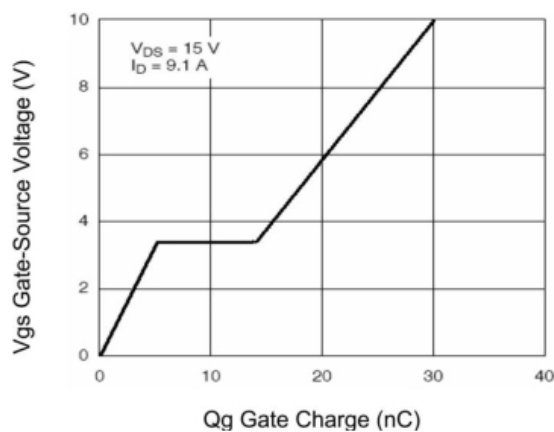
Drain-Source On-Resistance



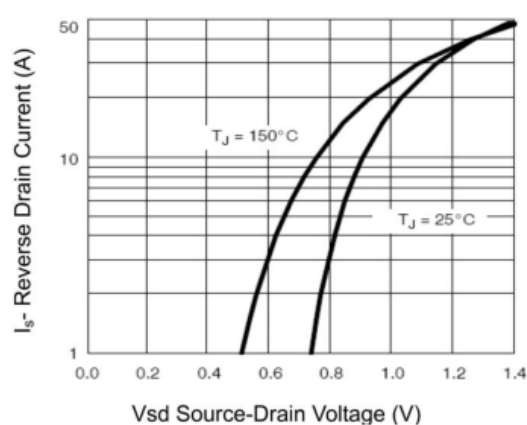
Rdson vs Vgs



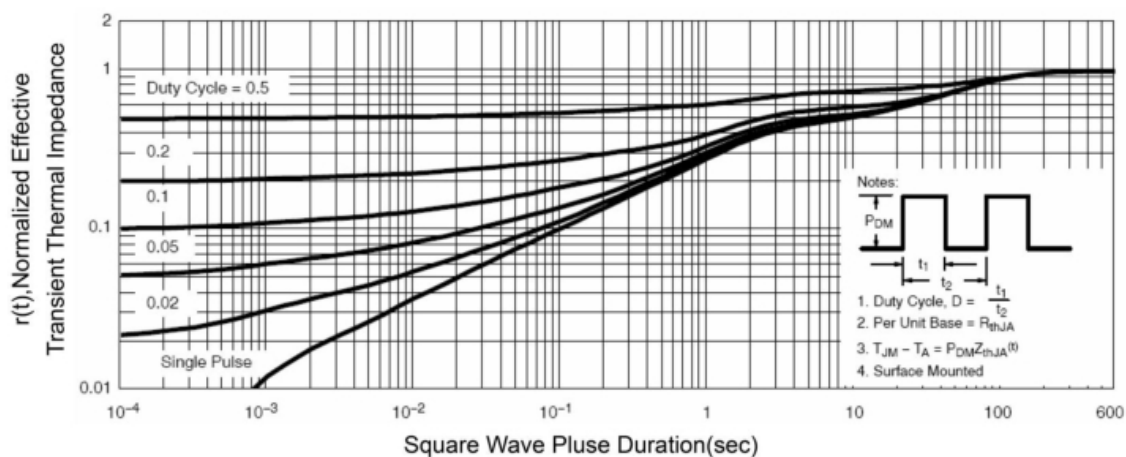
Capacitance vs Vds



Gate Charge

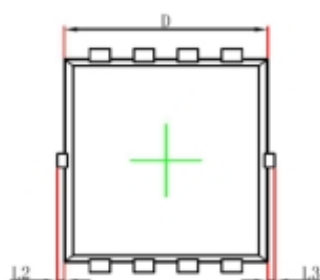


Source- Drain Diode Forward

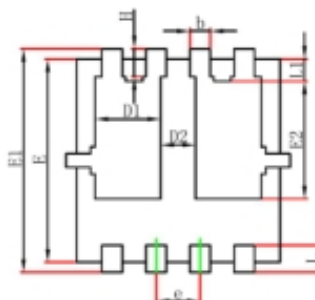


Normalized Maximum Transient Thermal Impedance

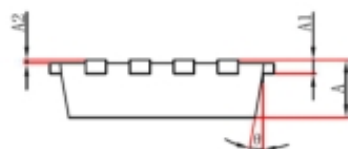
PDFNWB3.3×3.3-8L-B Package Information



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	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0~0.05		0~0.002	
D	2.900	3.100	0.114	0.122
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	3.150	3.450	0.124	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	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°