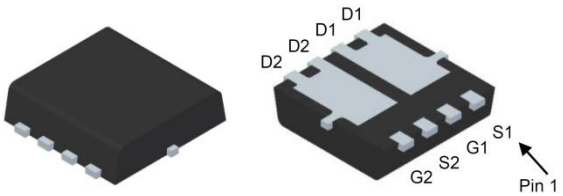
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	18mΩ@10V	12A
	24mΩ@4.5V	
-30V	30mΩ@-10V	-8A
	45mΩ@-4.5V	

Feature

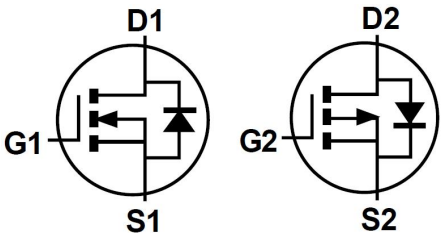
- N-Channel
  V_{DS} =30V,I_D =14A
  $R_{DS(ON)}$ < 30mΩ @ VGS=10V
  $R_{DS(ON)}$ < 42mΩ @ VGS=4.5V
- P-Channel
  V_{DS} =-30V,I_D = -11A
  $R_{DS(ON)}$ <40mΩ @ V_{GS}=-10V
  $R_{DS(ON)}$ <65mΩ @ V_{GS}=-4.5V
- High power and current handing capability
- Lead free product is acquired
- Surface mount package

Package

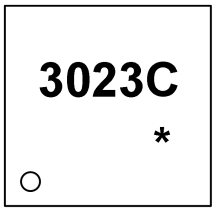


PDFNWB3.3×3.3-8L-B

Circuit diagram



Marking



3023C: Product code
* : Month code

Absolute maximum ratings (Ta=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	TA=25℃	I_D	12	-8	A
Maximum Power Dissipation	TA=25℃	P_D	16	15	W
Thermal Resistance from Junction to Ambient(t≤10s)		$R_{\theta JA}$	7.5		℃/W
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55 To 150	-55 To 150	℃

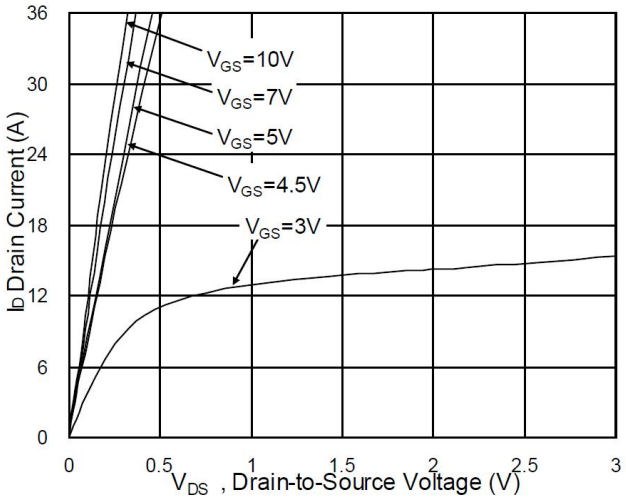
N-Channel Electrical characteristics (T_A=25 ºC, unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	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} =30V,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	1.0	1.5	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =8A		18	30	mΩ
		V_{GS} =4.5V, I_D =6A		24	42	
Dynamic characteristics						
Input capacitance	C_{iss}	V_{DS}=15V , V_{GS}=0V , f=1MHz		940	1316	pF
Output capacitance	C_{oss}			131	183	
Reverse transfer capacitance	C_{rss}			109	153	
Total gate charge@4.5V	Q_g	V_{DS}=15V , V_{GS}=4.5V , I_D=8A		9.63	13.5	nC
Gate-source charge	Q_{gs}			3.88	5.4	
Gate-drain charge	Q_{gd}			3.44	4.8	
Switching Characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=15V , V_{GS}=10V , R_G=1.5 I_D=8A		4.2	8.4	ns
Turn-on rise time	t_r			8.2	15	
Turn-off delay time	$t_{d(off)}$			31	62	
Turn-off fall time	t_f			4	8	
Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V , I_S=1A , T_J=25℃			1	V

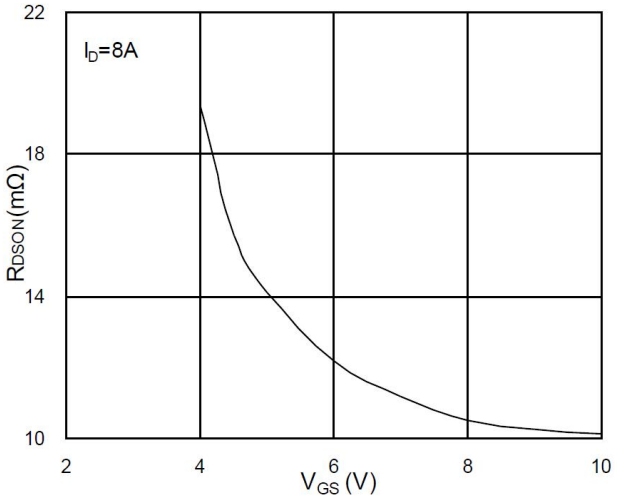
P-Channel Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Off 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} =-30V,V_{GS} = 0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
On characteristics						
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 =-6.5A		30	40	mΩ
		V_{GS} =-4.5V, I_D =-5A		45	65	
Forward transconductance	g_{FS}	V_{DS} =-5V, I_D =-6.5A	14			S
Switching characteristics						
Total gate charge	Q_g	V_{DS} =-15V,V_{GS} =-10V, I_D=-6.5A		9.2		nC
Gate-source charge	Q_{gs}			1.6		
Gate-drain charge	Q_{gd}			2.2		
Turn-on delay time	$t_{d(on)}$	V_{DD}=-15V,I_D=-4A, V_{GS}=-10V,R_G=3Ω		7.5		ns
Turn-on rise time	t_r			5.5		
Turn-off delay time	$t_{d(off)}$			19		
Turn-off fall time	t_f			7		
Drain-Source Diode characteristics						
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S=-1A			-1.2	V

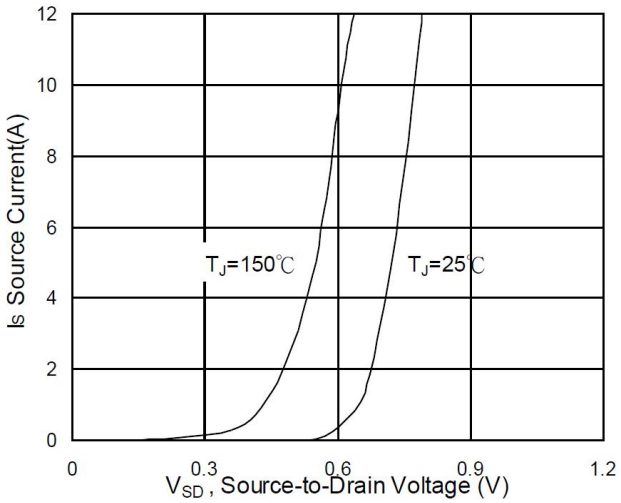
N-Channel Typical Characteristics



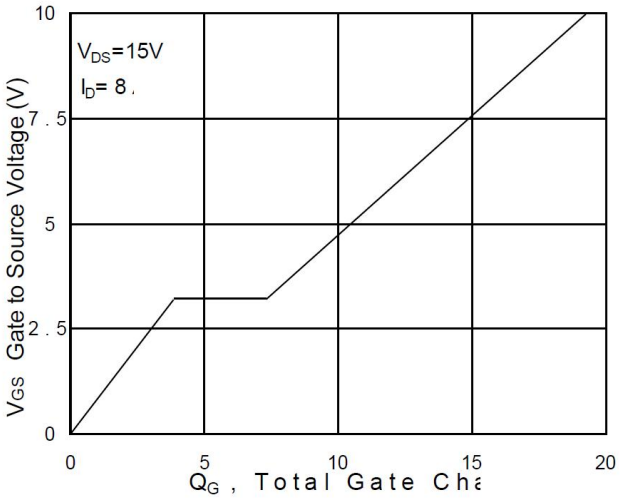
Typical Output Characteristics



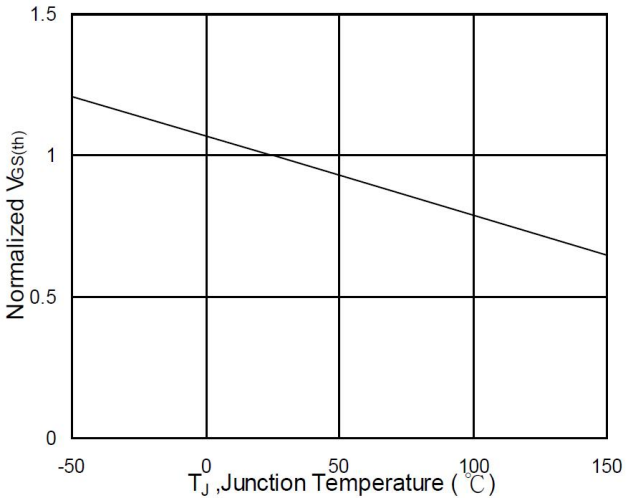
On-Resistance vs.Gate-Source



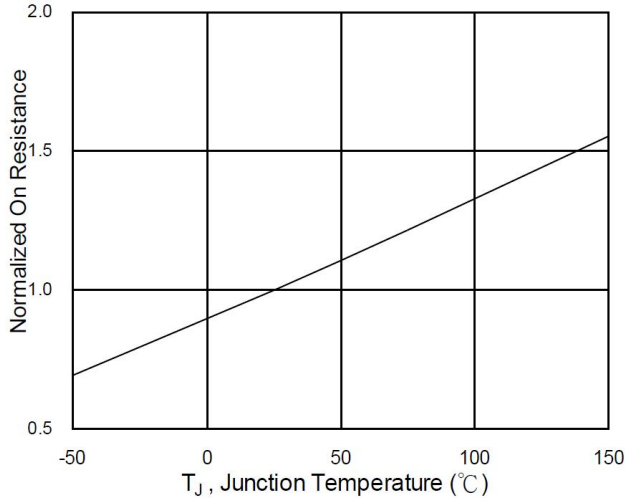
Forward Characteristics Of Reverse



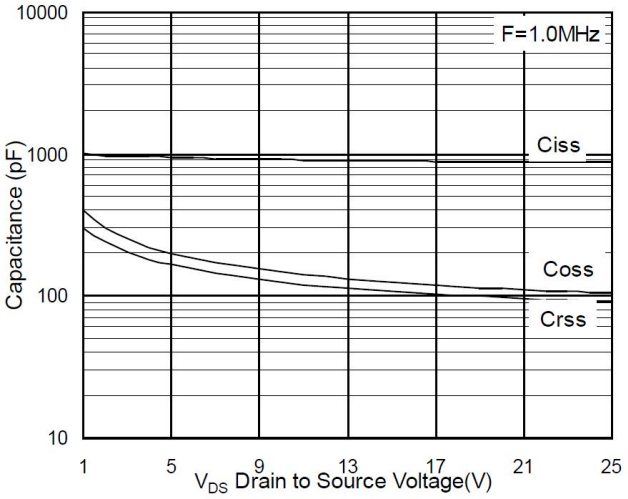
Gate-Charge Characteristics



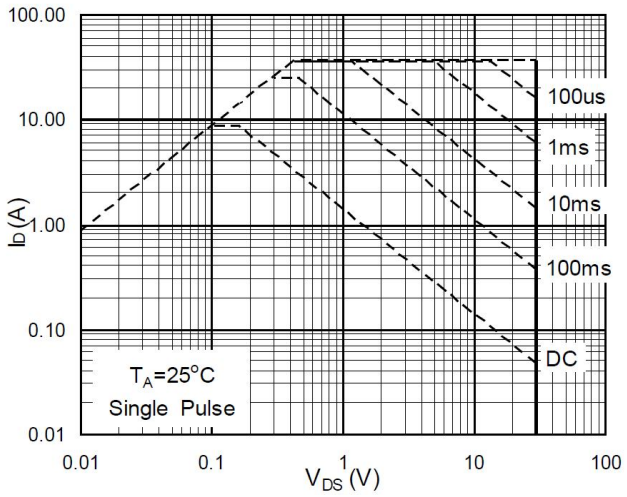
Normalized $V_{GS(th)}$ vs.T_J



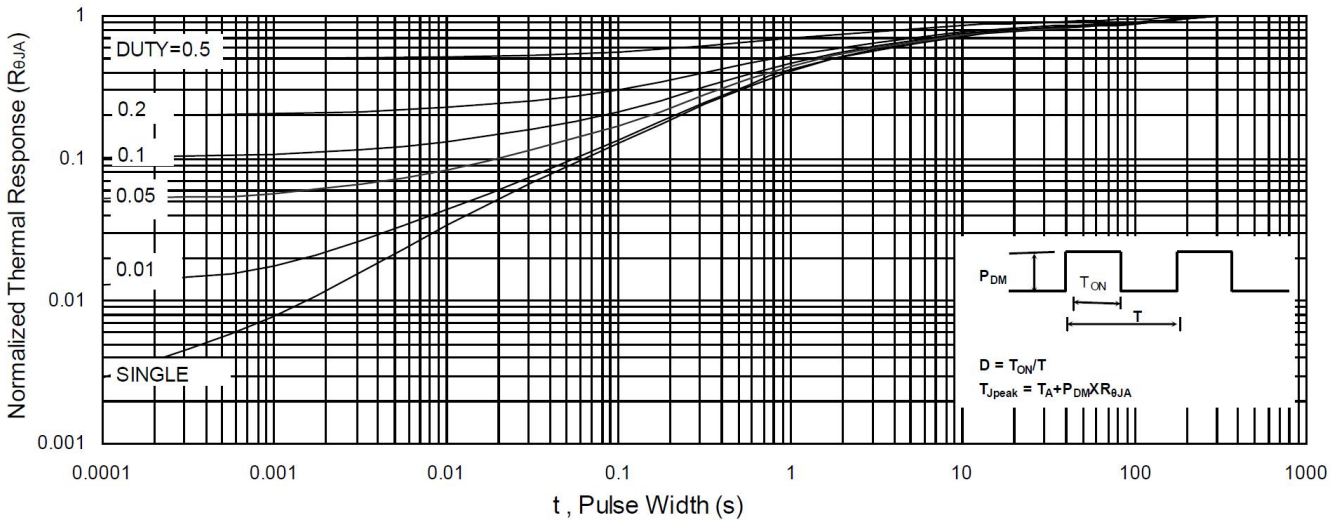
Normalized R_{DSON} vs.T_J



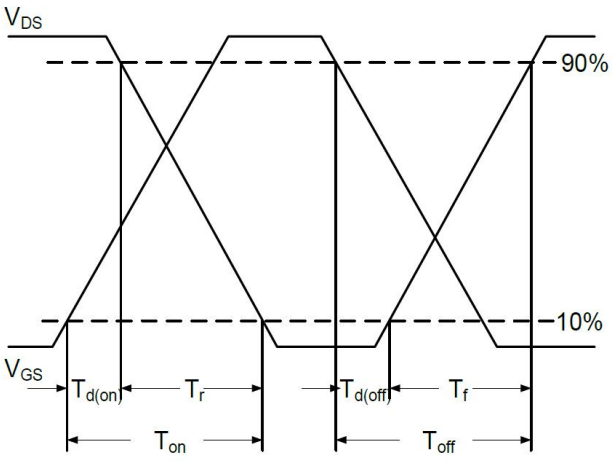
Capacitance



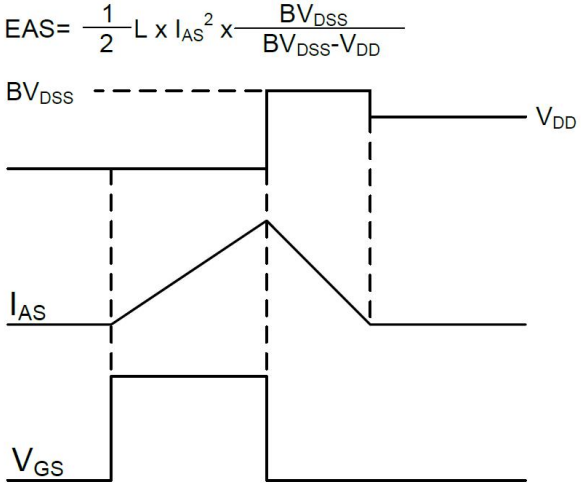
Safe Operating Area



Normalized Maximum Transient Thermal Impedance

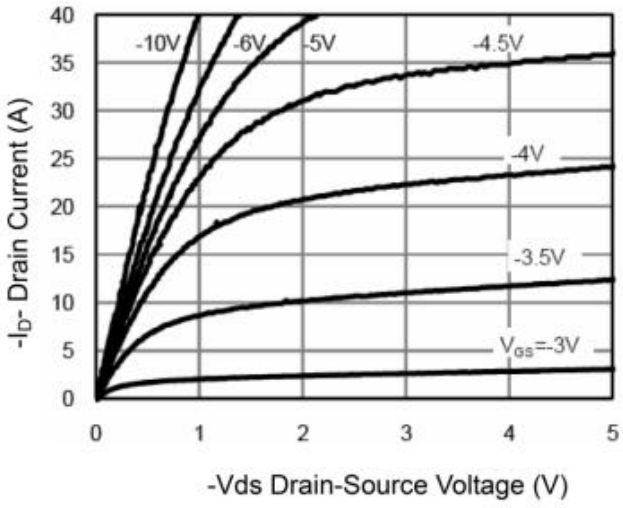


Switching Time Waveform

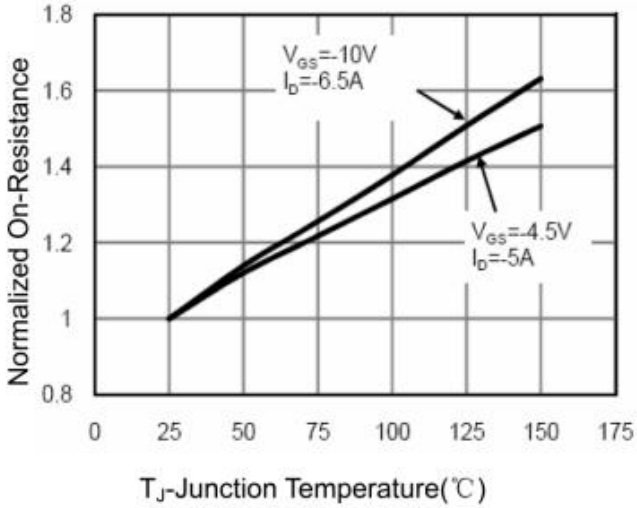


Unclamped Inductive Switching Waveform

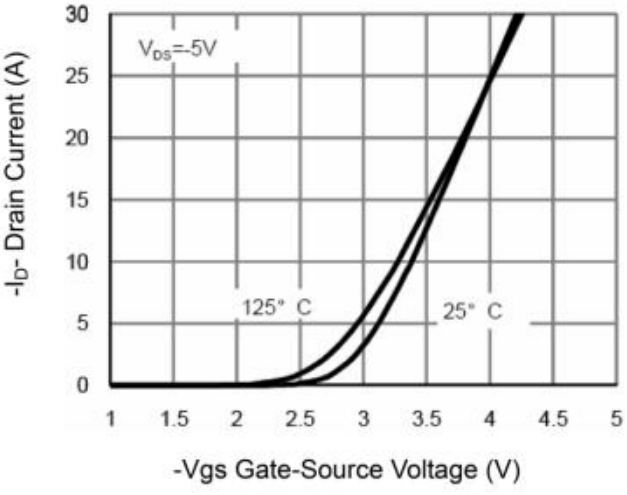
P-Channel Typical Characteristics



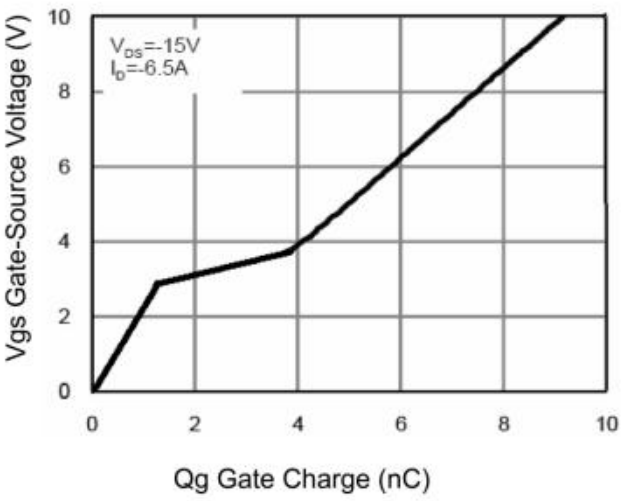
Typical Output Characteristics



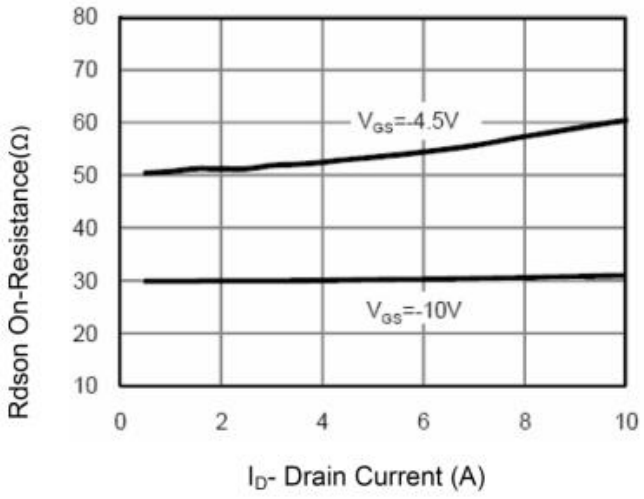
Rdson-Junction Temperature



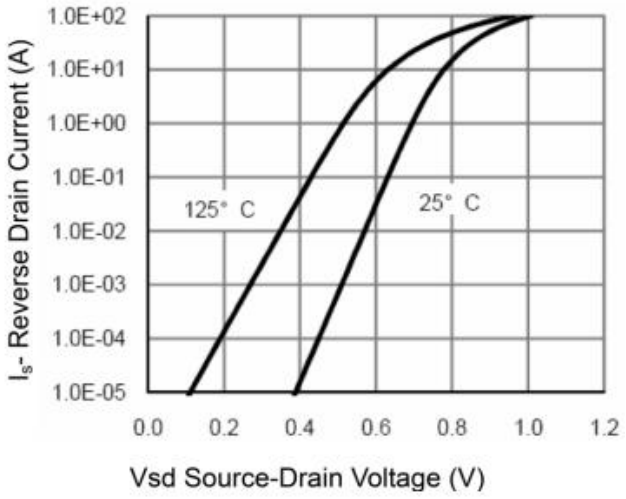
Transfer Characteristics



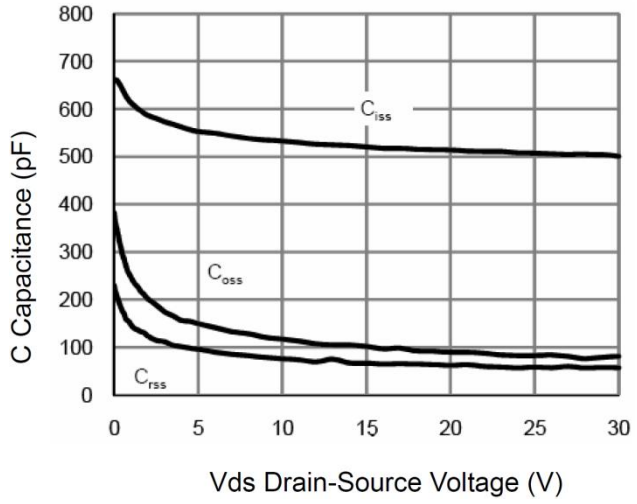
Gate-Charge



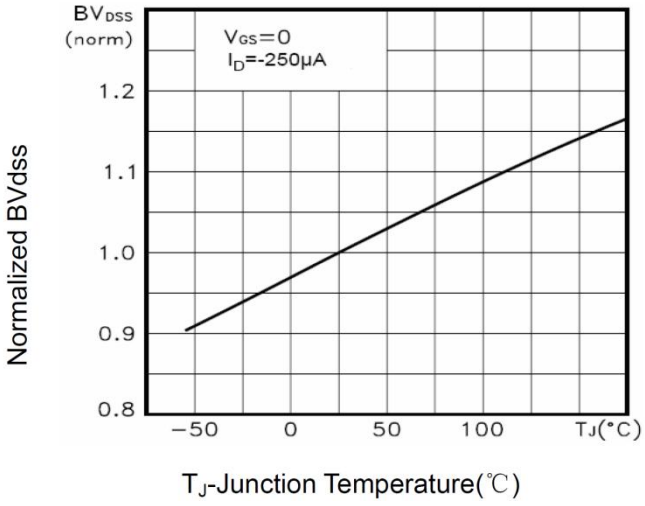
Rdson- Drain Current



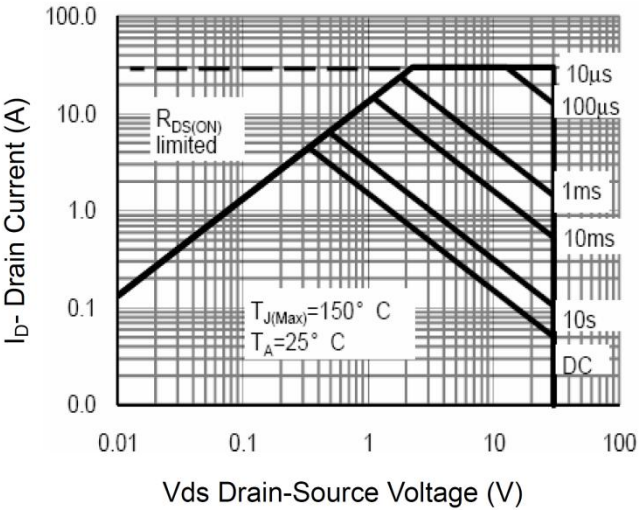
Source- Drain Diode Forward



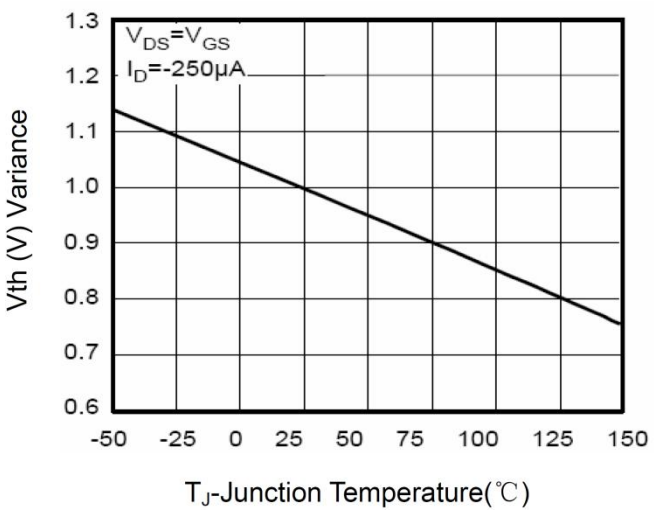
Capacitance vs Vds



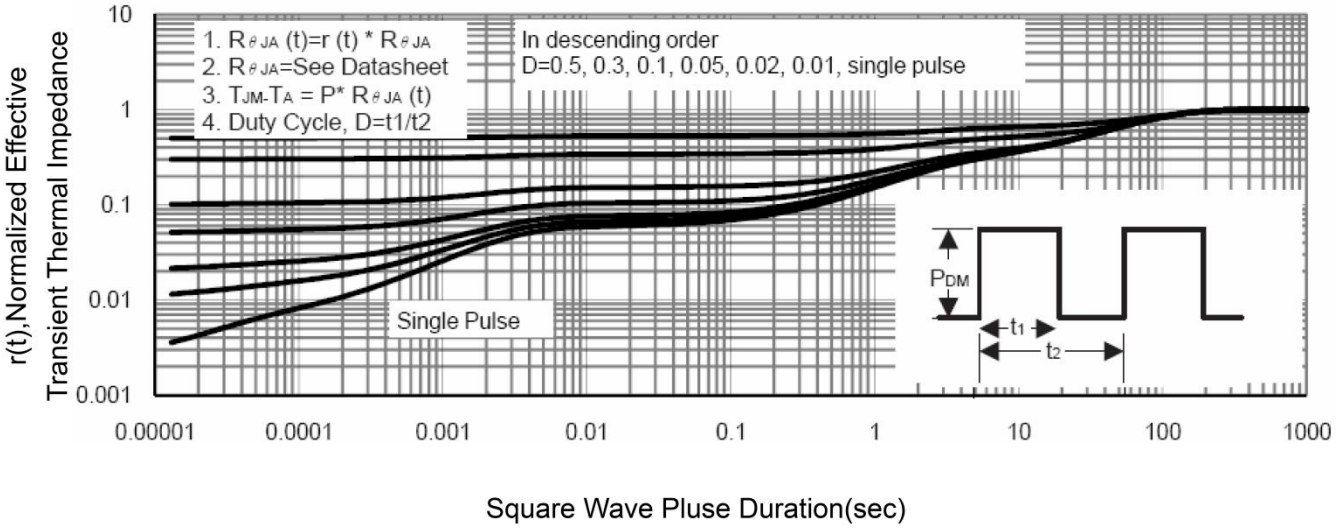
BVDSS vs Junction Temperature



Safe Operation Area

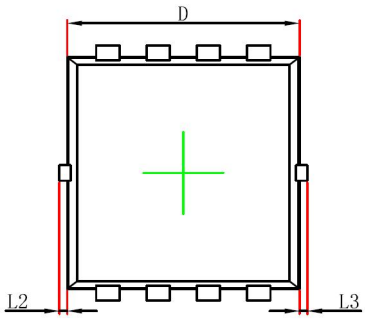


VGS(th) vs Junction Temperature

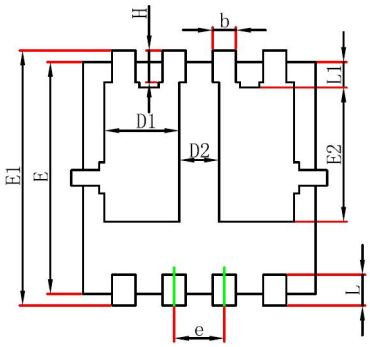


Normalized Maximum Transient Thermal Impedance

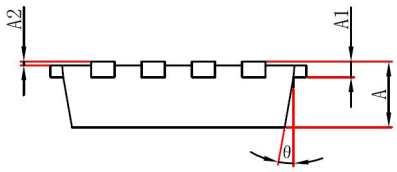
PDFNWB3.3×3.3-8L-B Package Information



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°

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