Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	15mΩ@10V	25A
	18mΩ@4.5V	
-40V	32mΩ@-10V	-18A
	45mΩ@-4.5V	

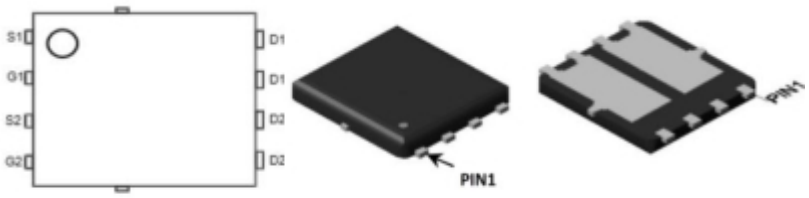
Feature

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Fast Switching Speed

Application

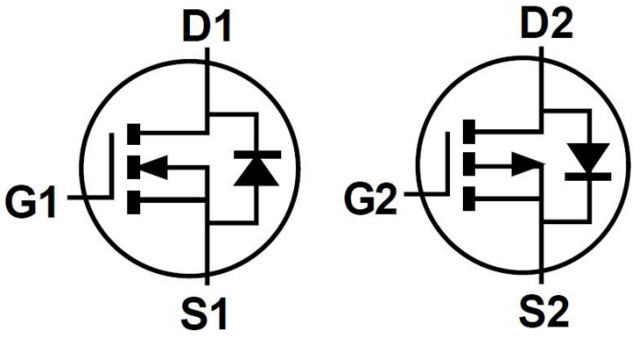
- Load switching
- Inverters
- Power Management

Package

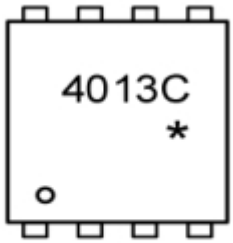


PDFNWB5X6-8L

Circuit diagram



Marking



4013C : Product 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}	40	-40	V
Gate-Source Voltage	V_{GS}	±20	±20	V
Continuous Drain Current(T_C=25℃)	I_D	25	-18	A
Pulsed Drain Current	I_{DM}	100	-72	A
Maximum Power Dissipation(T_C=25℃)	P_D	30		W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	4.16		℃/W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~ +150		℃

N-Electrical characteristics

(T_A=25℃, unless otherwise noted)

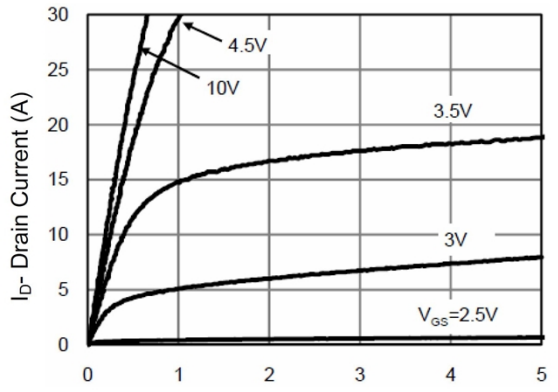
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$BV_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	40			V
Drain-Source Leakage Current	I_{DSS}	V_{DS} =32V, V_{GS} = 0V , T_J=25℃			1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	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 =10A		15	19	mΩ
		V_{GS} =4.5V, I_D =8A		18	25	
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V, f=1MHz		1061		pF
Output capacitance	C_{oss}			110		
Reverse transfer capacitance	C_{rss}			95		
Total gate charge	Q_g	V_{DS} =15V, V_{GS} =10V, I_D =10A		23		nC
Gate-source charge	Q_{gs}			3.3		
Gate-drain charge	Q_{gd}			5.3		
Switching Characteristics						
Turn-on Delay Time	$T_{d(on)}$	V_{DD}=15V, V_{GS} =10V, R_G=3.3Ω, I_D=6A		5.5		nS
Turn-on Rise Time	T_r			14		
Turn-Off Delay Time	$T_{d(off)}$			25		
Turn-Off Fall Time	t_f			12		
Source-Drain Diode Characteristics						
Diode Forward Voltage	V_{SD}	I_S=1A, V_{GS}=0V, T_J=25℃			1.2	V

P-Channel Electrical characteristics

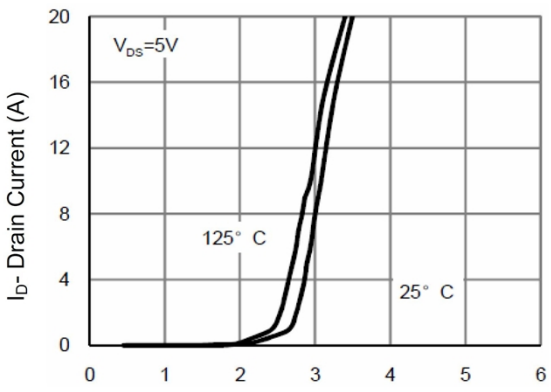
(T_A=25℃, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Off characteristics						
Drain-source breakdown voltage	$BV_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-40			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-32V, V_{GS} = 0V , T_J=25℃			-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 =-5A		32	45	mΩ
		V_{GS} =-4.5V, I_D =-3A		45	60	
Switching Characteristics						
Input Capacitance	C_{iss}	V_{DS} =-15V,V_{GS} =0V, f =1MHz		964		pF
Output Capacitance	C_{oss}			110		
Reverse Transfer Capacitance	C_{rss}			80		
Total Gate Charge	Q_g	V_{DS}=-15V, V_{GS}=-10V, I_D=-10A		21		nC
Gate-Source Charge	Q_{gs}			3.5		
Gate-Drain Charge	Q_{gd}			5.2		
Switching Characteristics						
Turn-on Delay Time	$T_{d(on)}$	V_{DD}=-15V, V_{GS}=-10V, R_{GEN} =3.3Ω, I_D =-6A		5.1		nS
Turn-on Rise Time	T_r			15		
Turn-Off Delay Time	$T_{d(off)}$			23		
Turn-Off Fall Time	t_f			11		
Source-Drain Diode Characteristics						
Body Diode Voltage	V_{SD}	I_S=-1A, V_{GS} = 0V, T_J=25℃			-1.2	V

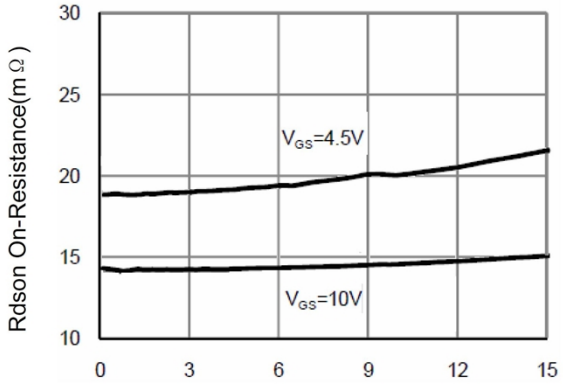
N-Channel Typical Characteristics



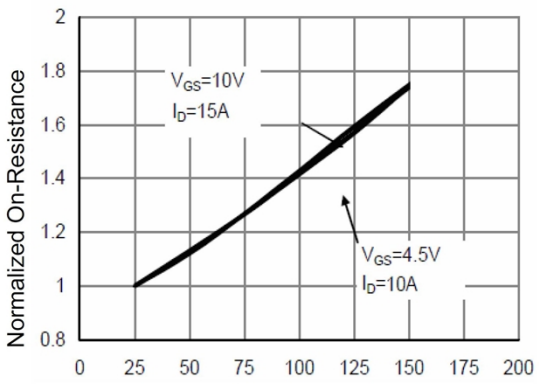
Output Characteristics



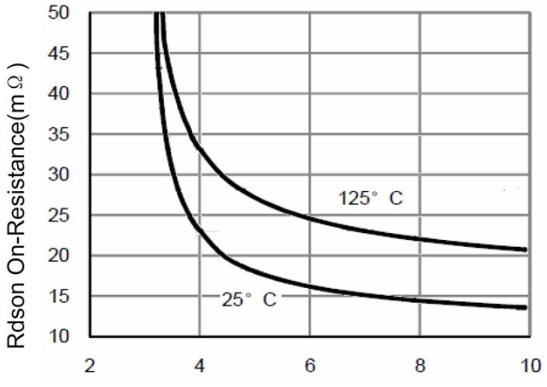
Transfer Characteristics



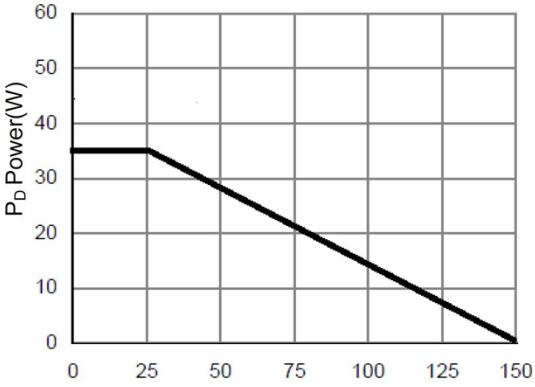
Drain-Source On-Resistance



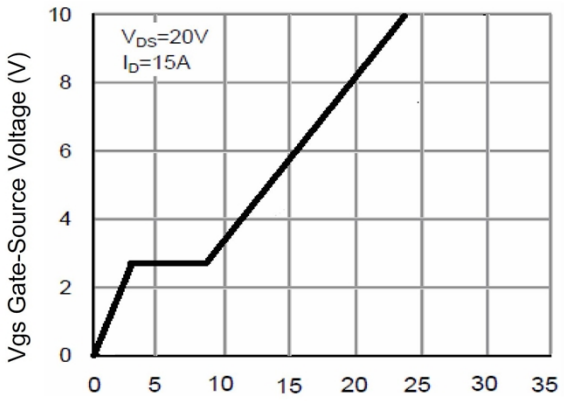
Drain-Source On-Resistance



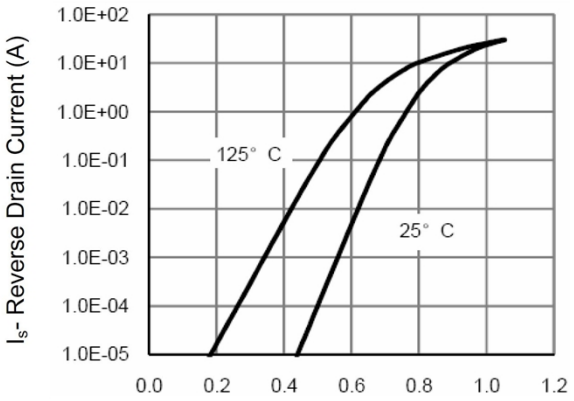
Rdson vs Vgs



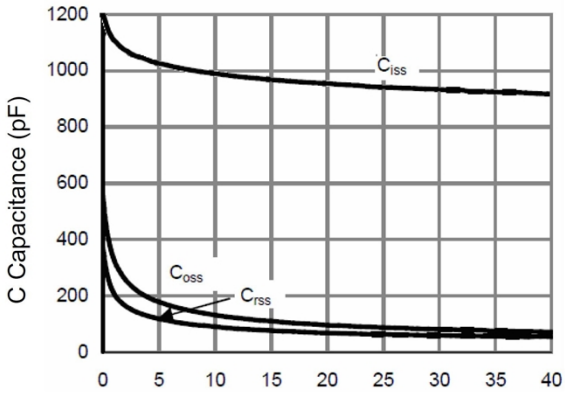
Power Dissipation



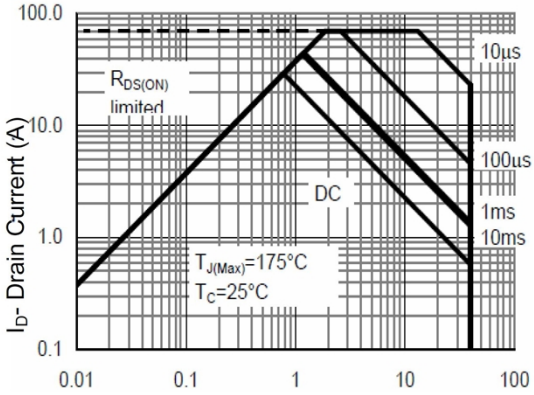
Gate Charge



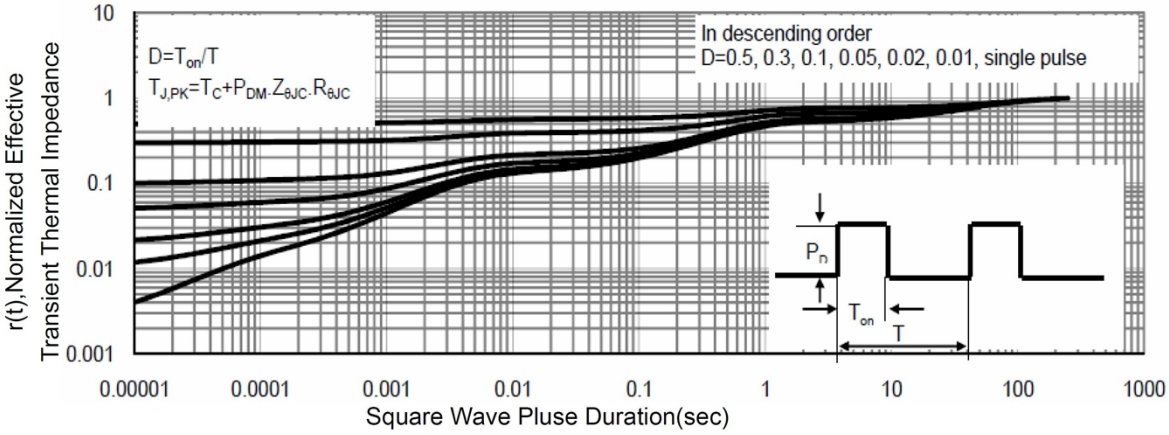
Source- Drain Diode Forward



Capacitance vs Vds



Safe Operation Area



Normalized Maximum Transient Thermal Impedance

P-Channel Typical Characteristics

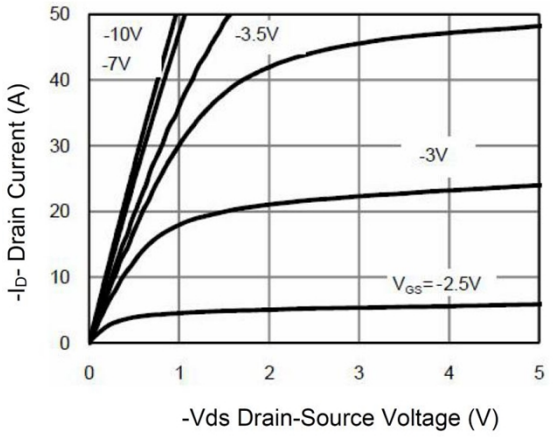


Figure 1 Output Characteristics

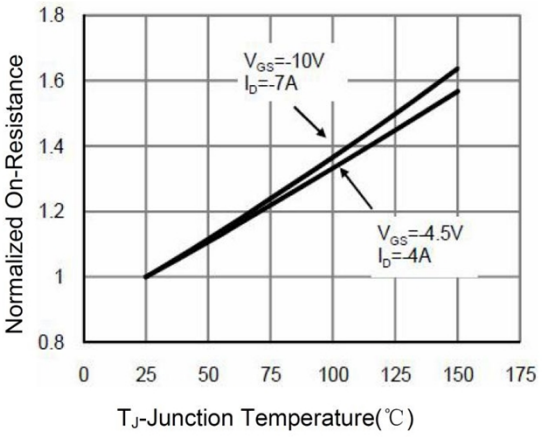


Figure 4 Rdson-Junction Temperature

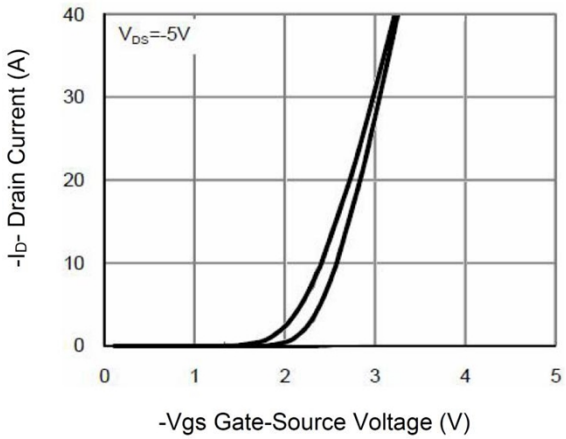


Figure 2 Transfer Characteristics

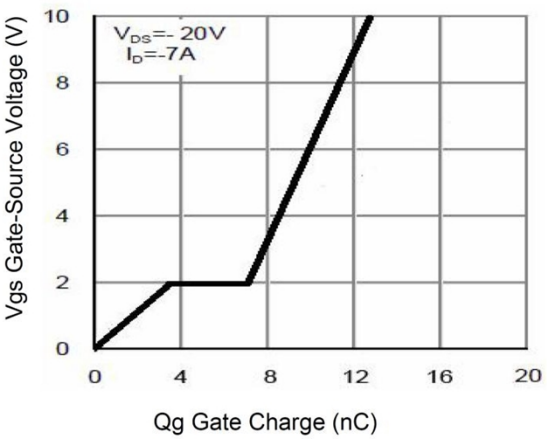


Figure 5 Gate Charge

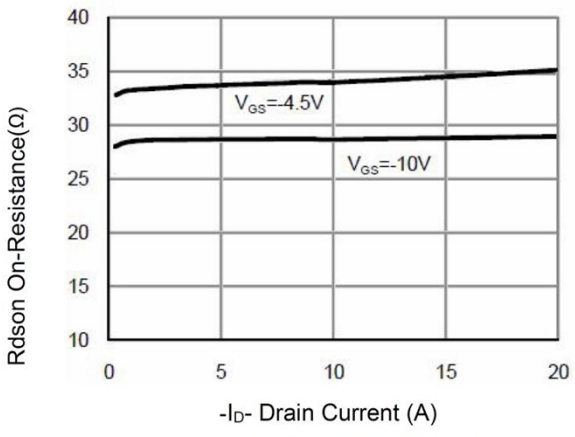


Figure 3 Rdson- Drain Current

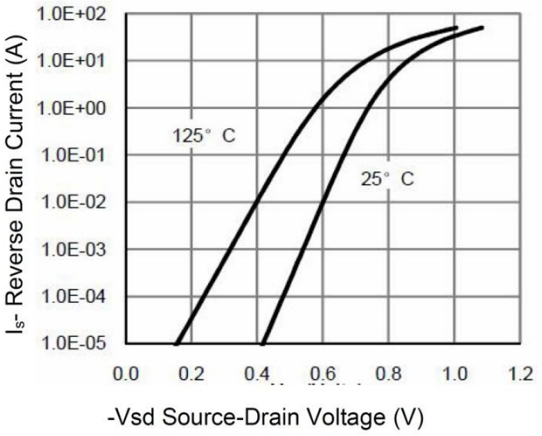


Figure 6 Source- Drain Diode Forward

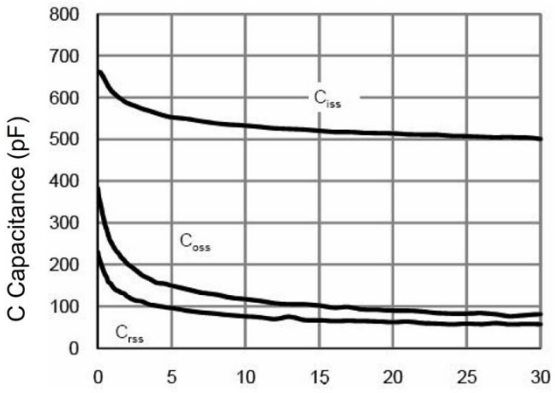


Figure 7 Capacitance vs Vds

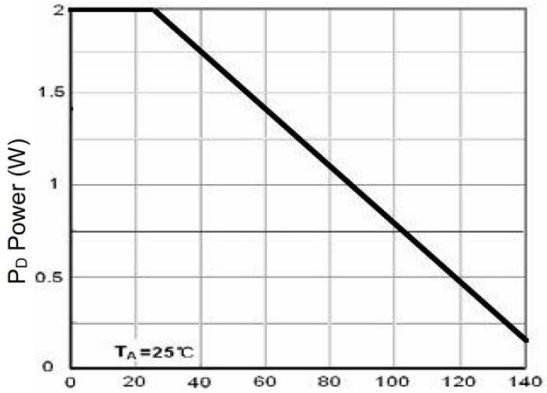


Figure 9 Power Dissipation

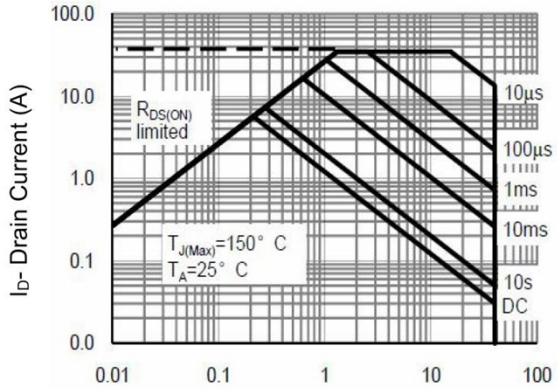


Figure 8 Safe Operation Area

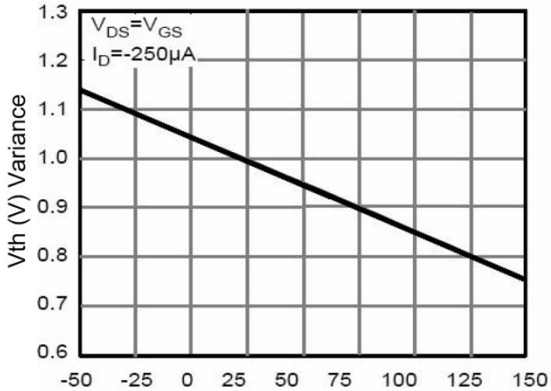


Figure 10 $V_{GS(th)}$ vs Junction Temperature

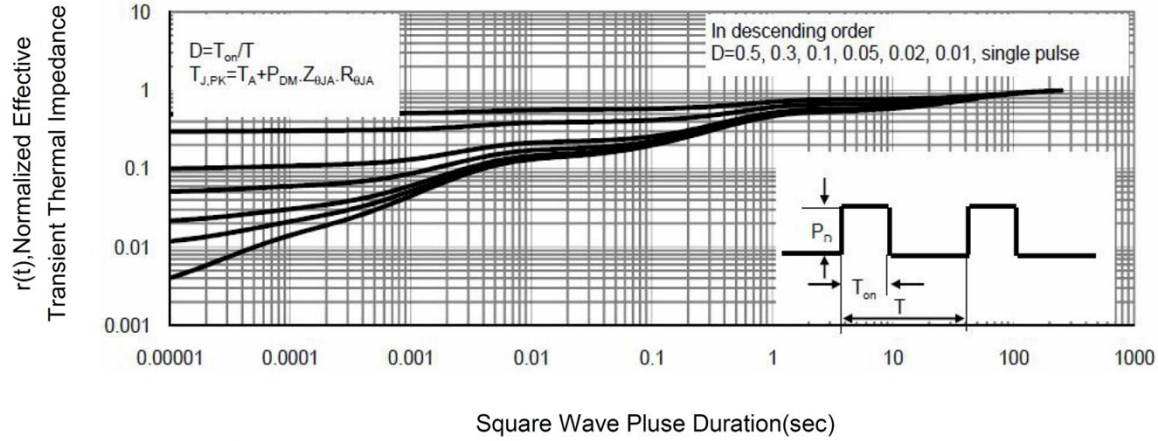
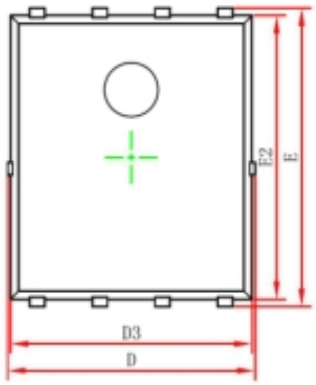
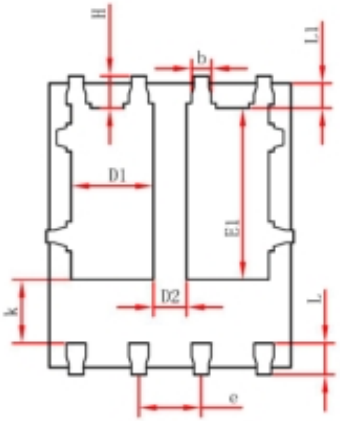


Figure 11 Normalized Maximum Transient Thermal Impedance

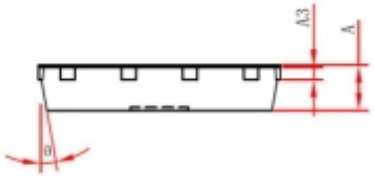
PDFNWB5x6-8L-A Package Information



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°