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	

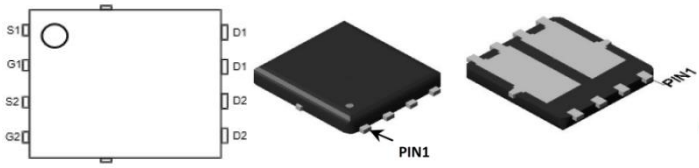
Feature

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

Application

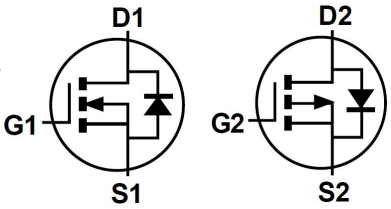
- Load switching
- Inverters
- Power Management

Package

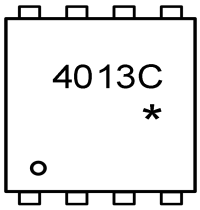


PDFNWB5X6-8L

Circuit diagram



Marking



4013C : Product code
* : Month code.

Absolute maximum ratings (Ta=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(TC=25℃)	I_D	25	-18	A
Pulsed Drain Current	I_{DM}	100	-72	A
Maximum Power Dissipation(TC=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 To 150	-55 To 150	℃

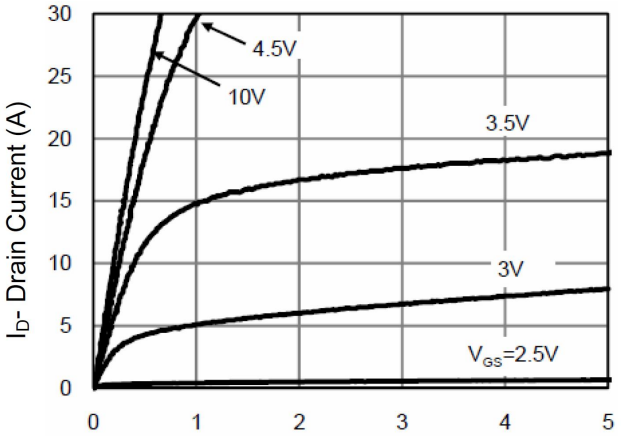
N-Electrical characteristics (T_A=25 ºC, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	VGS=0V , ID=250uA	40	---	---	V
Drain-Source Leakage Current	I_{DSS}	VDS=32V , VGS=0V , TJ=25℃	---	---	1	uA
Gate-Source Leakage Current	I_{GSS}	VGS=±20V , VDS=0V	---	---	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VGS=VDS , ID =250uA	1	1.5	2.5	V
Drain-source on-resistance	$R_{DS(ON)}$	VGS=10V , ID=10A	---	15	19	mΩ
		VGS=4.5V , ID=8A	---	18	25	
Dynamic Characteristics						
Input Capacitance	C_{iss}	VDS=15V , VGS=0V , f=1MHz	---	1061	---	pF
Output Capacitance	C_{oss}		---	110	---	
Reverse Transfer Capacitance	C_{rss}		---	95	---	
Total Gate Charge	Q_g	VDS=15V , VGS=10V , ID=10A	---	23	---	nC
Gate-Source Charge	Q_{gs}		---	3.3	---	
Gate-Drain Charge	Q_{gd}		---	5.3	---	
Switching Characteristics						
Turn-On Delay Time	$T_{d(on)}$	VDD=15V , VGS=10V , RG=3.3Ω ID=6A	---	5.5	---	ns
Rise Time	T_r		---	14	---	
Turn-Off Delay Time	$T_{d(off)}$		---	25	---	
Fall Time	T_f		---	12	---	
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1.2	V

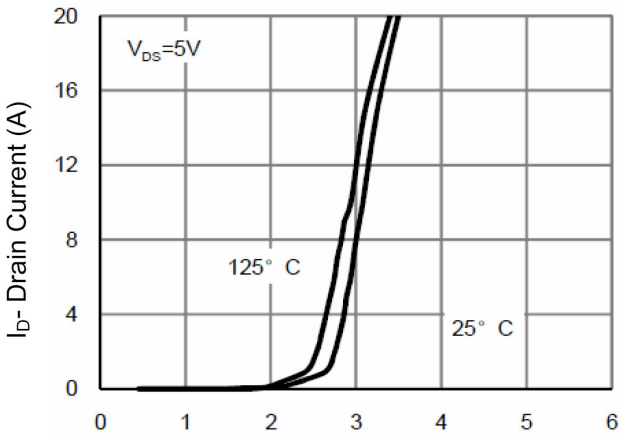
P-Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	VGS=0V , ID=-250uA	-40	---	---	V
Drain-Source Leakage Current	I_{DSS}	VDS=-32V , VGS=0V , TJ=25℃	---	---	-1	uA
Gate-Source Leakage Current	I_{GSS}	VGS=±20V , VDS=0V	---	---	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VGS=VDS , ID =-250uA	-1	-1.5	-2.5	V
Drain-source on-resistance	$R_{DS(ON)}$	VGS=-10V , ID=-5A	---	32	45	mΩ
		VGS=-4.5V , ID=-3A	---	45	60	
Dynamic Characteristics						
Input Capacitance	C_{iss}	VDS=-15V , VGS=0V , f=1MHz	---	964	---	pF
Output Capacitance	C_{oss}		---	110	---	
Reverse Transfer Capacitance	C_{rss}		---	80	---	
Total Gate Charge	Q_g	VDS=-15V , VGS=-10V , ID=-10A	---	21	---	nC
Gate-Source Charge	Q_{gs}		---	3.5	---	
Gate-Drain Charge	Q_{gd}		---	5.2	---	
Switching Characteristics						
Turn-On Delay Time	$T_{d(on)}$	VDD=-15V , VGS=-10V , RG=3.3Ω ID=-6A	---	5.1	---	ns
Rise Time	T_r		---	15	---	
Turn-Off Delay Time	$T_{d(off)}$		---	23	---	
Fall Time	T_f		---	11	---	
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V , I_S=-1A , T_J=25℃	---	---	-1.2	V

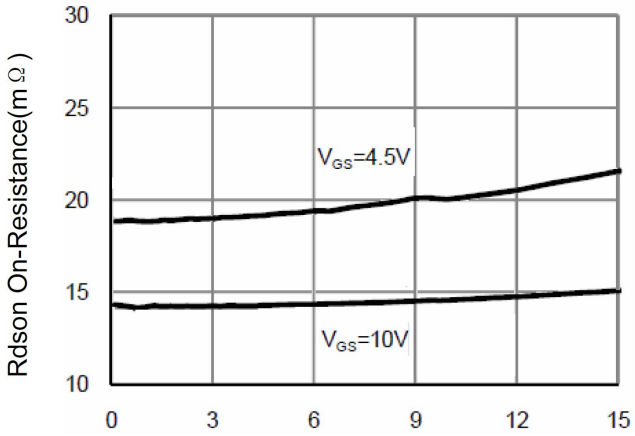
N-Channel Typical Characteristics



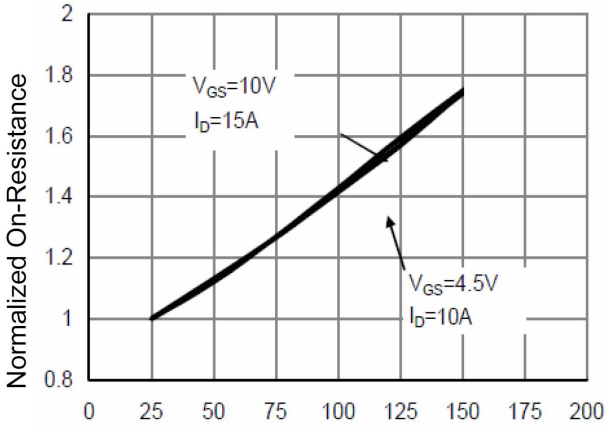
Output Characteristics



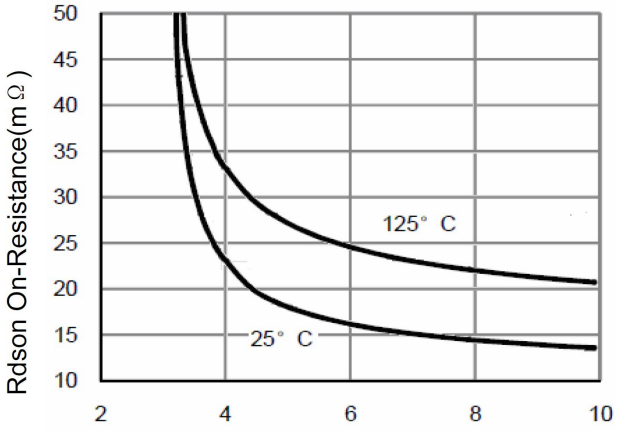
Transfer Characteristics



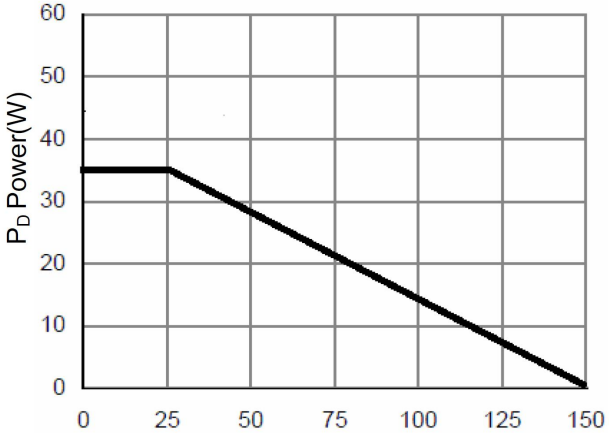
Drain-Source On-Resistance



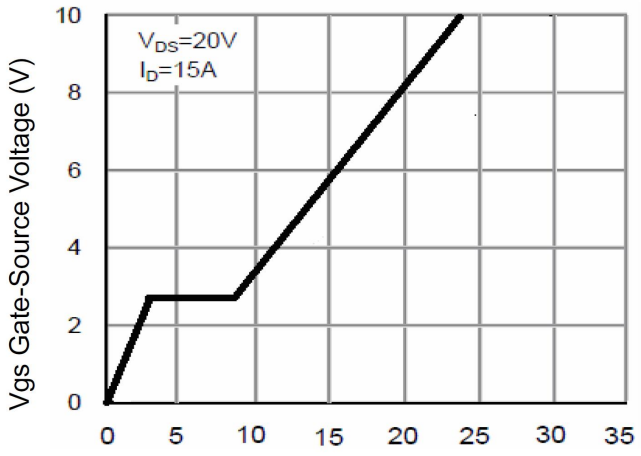
Drain-Source On-Resistance



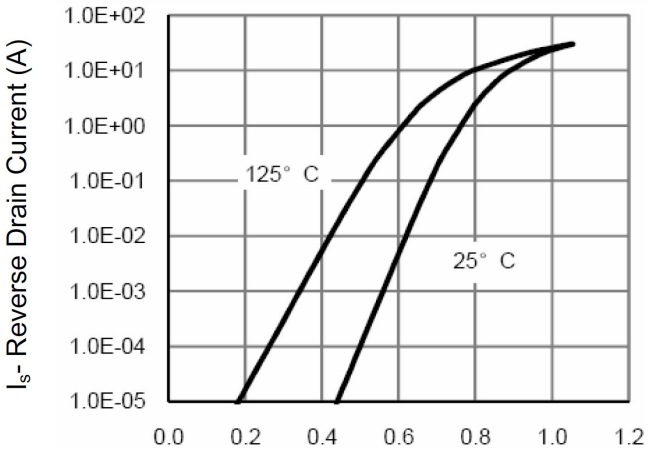
Rdson vs Vgs



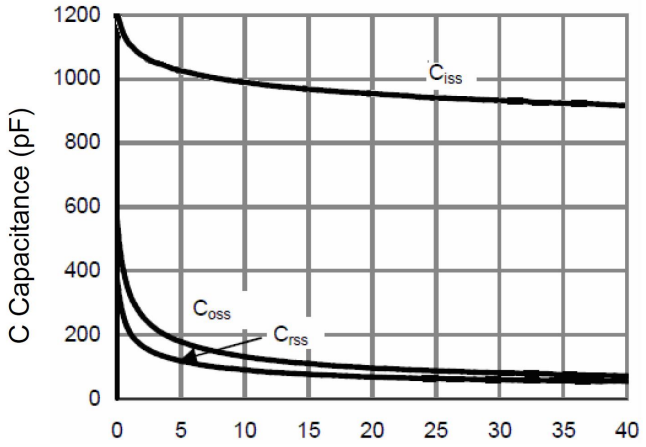
Power Dissipation



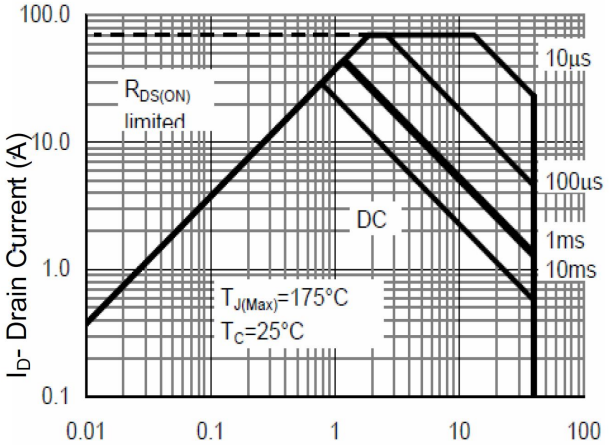
Gate Charge



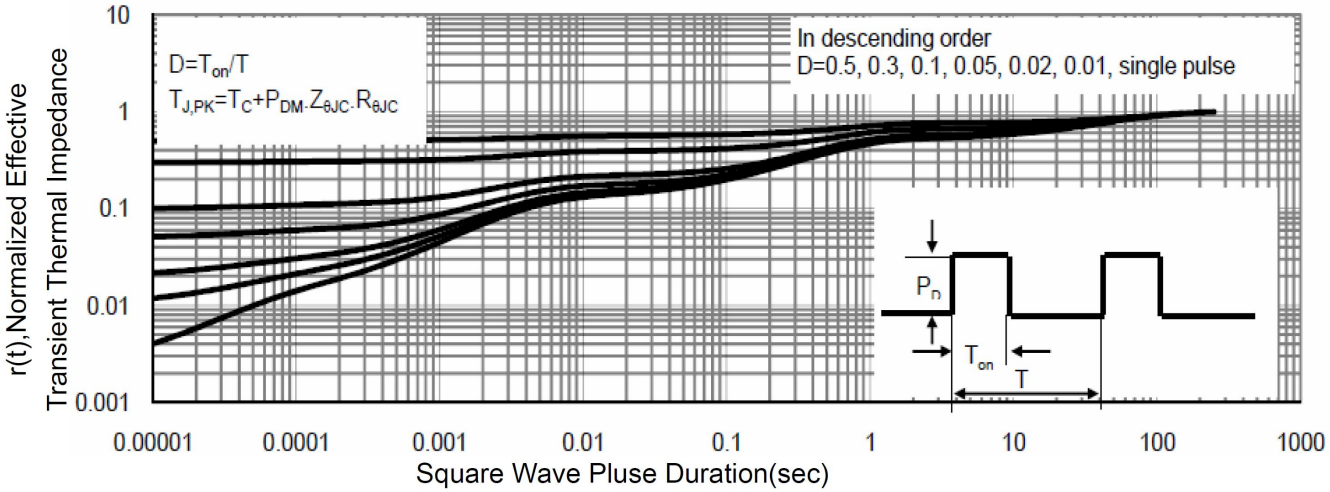
Source- Drain Diode Forward



Capacitance vs Vds

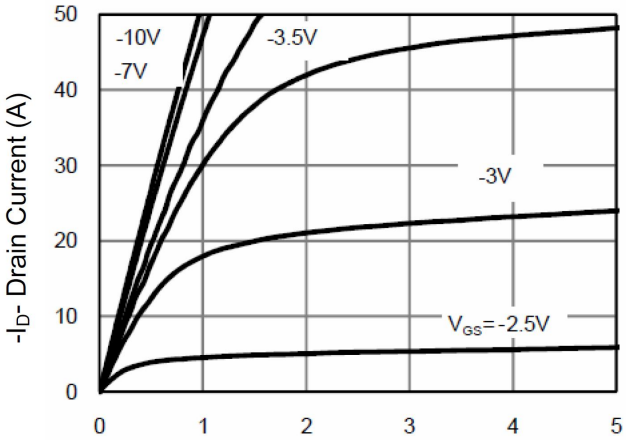


Safe Operation Area

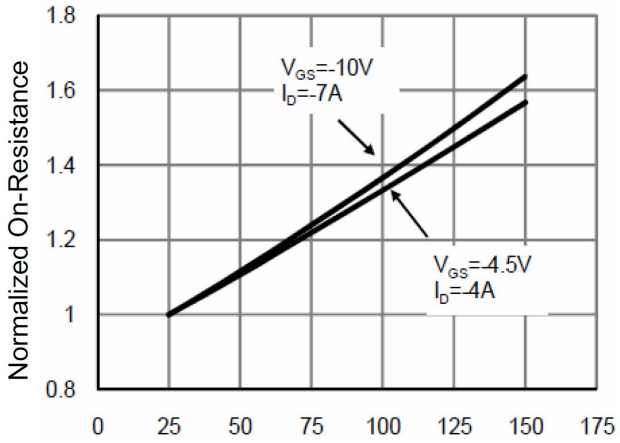


Normalized Maximum Transient Thermal Impedance

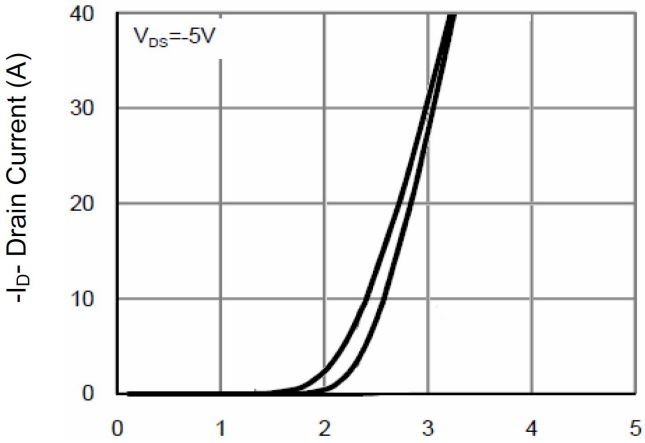
P-Channel Typical Characteristics



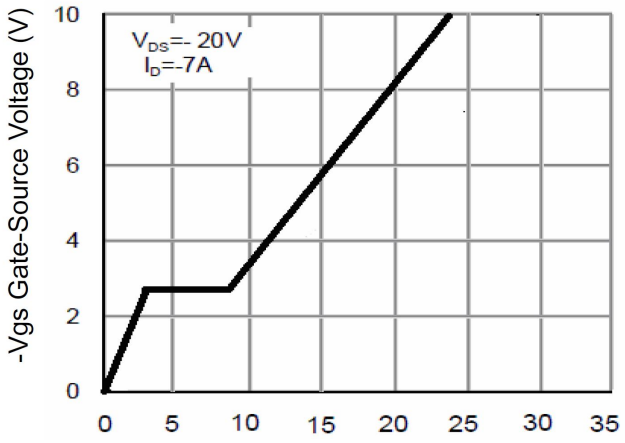
Output Characteristics



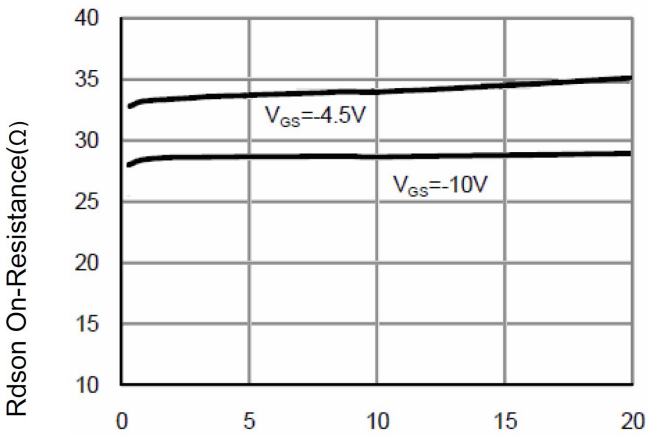
Rdson-Junction Temperature



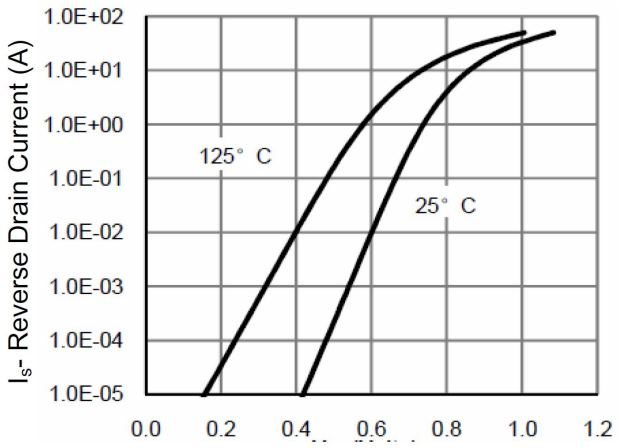
Transfer Characteristics



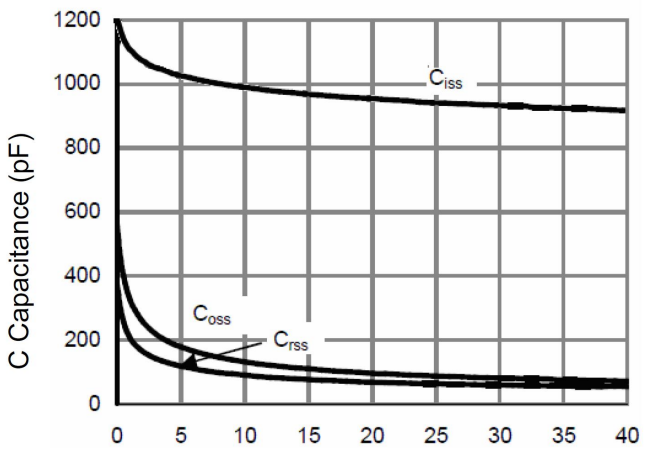
Gate Charge



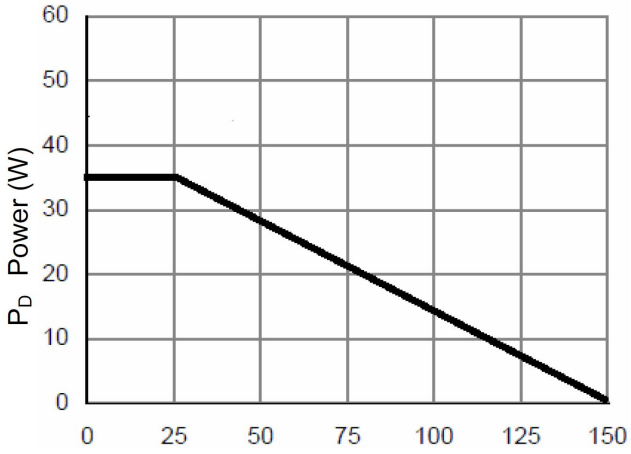
Rdson- Drain Current



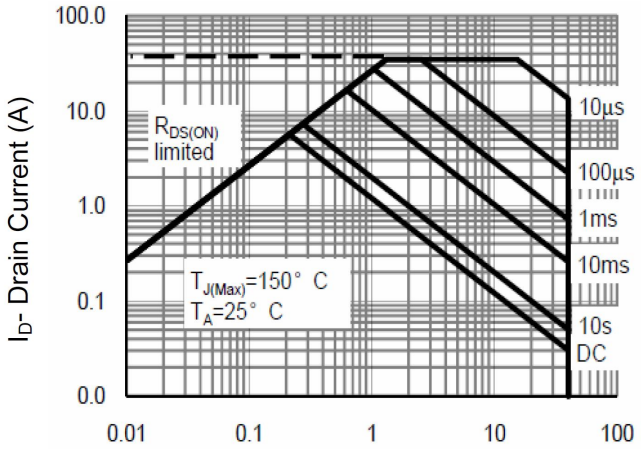
Source- Drain Diode Forward



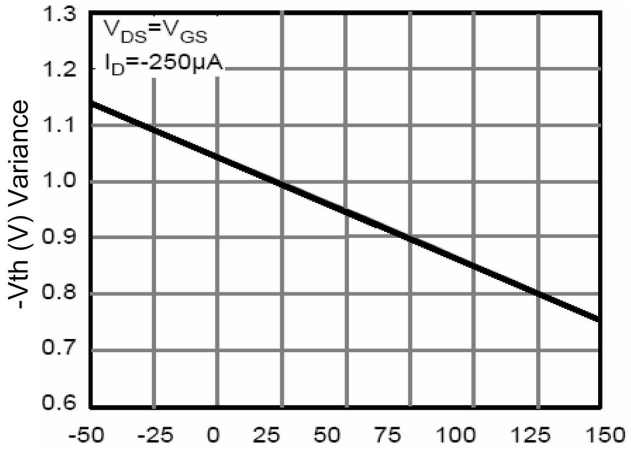
Capacitance vs Vds



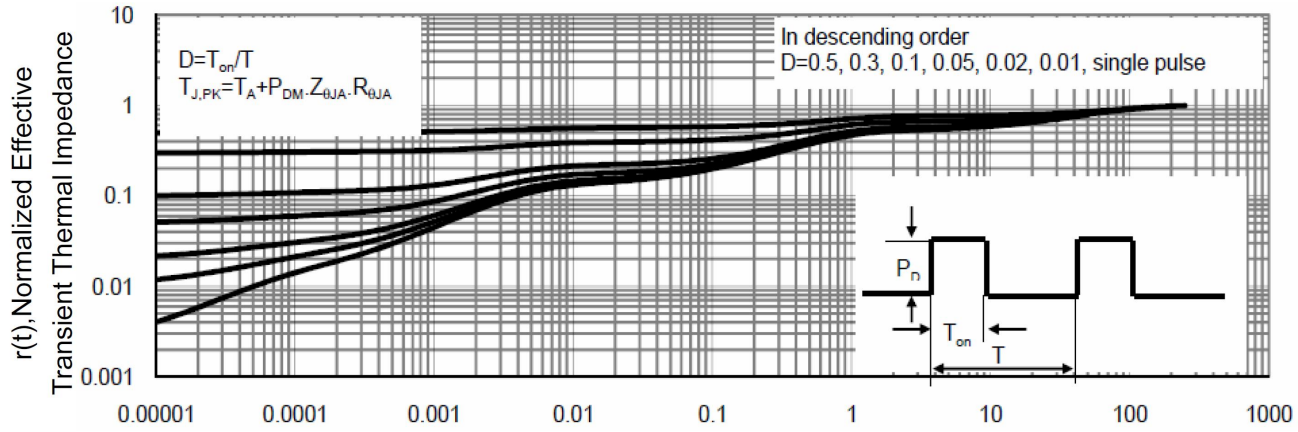
Power Dissipation



Safe Operation Area

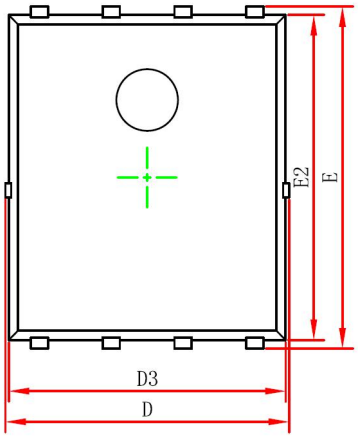


VGS(th) vs Junction Temperature

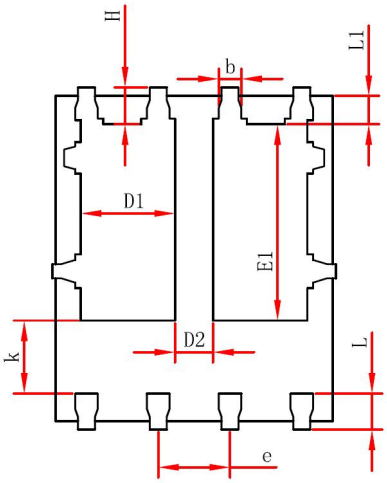


Normalized Maximum Transient Thermal Impedance

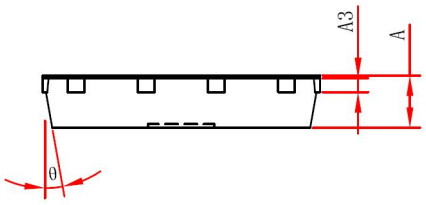
PDFNWB5x6-8L-A Package Information



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°