Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	2.4mΩ@10V	90A
	4.8mΩ@4.5V	

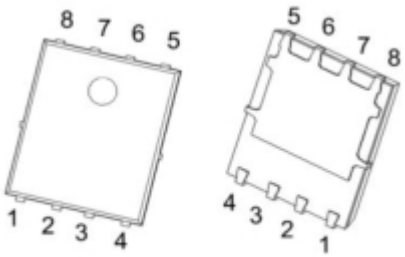
Feature

- High density cell design for ultra low Rdson
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation
- 100% UIS Tested

Application

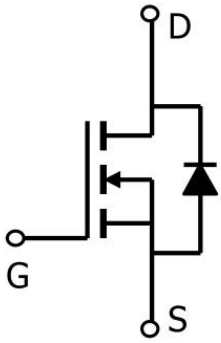
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package

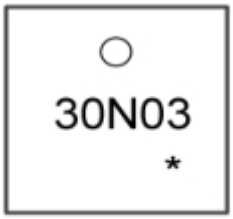


PDFN5X6-8L

Circuit diagram



Marking



30N03 =Device Code
*** =Month Code**

Absolute maximum ratings

(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain source voltage	V_{DS}	30	V
Gate source voltage	V_{GS}	±20	V
Drain Current-Continuous (Tc=25℃)	I_D	90	A
Pulsed drain current	I_{DM}	360	A
Maximum Power Dissipation (Tc=25℃)	P_D	92	W
Single pulsed avalanche energy (Note 5)	E_{AS}	66	mJ
Thermal resistance, junction-case (Note 2)	$R_{\theta JC}$	1.36	℃/W
Operation and storage temperature	T_{STG}, T_J	-55 to 175	℃

Electrical characteristics

(T_A=25℃, unless otherwise noted)

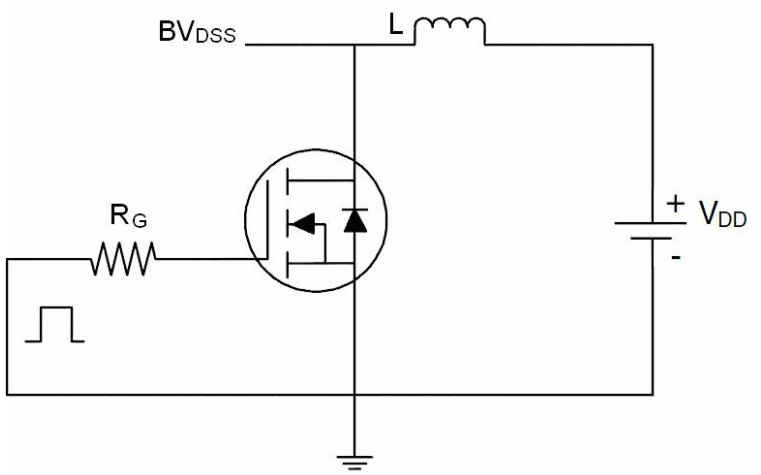
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-source breakdown voltage	$BV_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =30V,V_{GS} = 0V			1	uA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V , V_{DS}=0V			±0.1	uA
On Characteristics (Note 3)						
Gate-source 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 =20A		2.4	3	mΩ
		V_{GS} =4.5V, I_D =15A		4.8	6.4	
Dynamic Characteristics (Note4)						
Input Capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V, f=1MHz		2560		pF
Output Capacitance	C_{oss}			267		
Reverse Transfer Capacitance	C_{rss}			210		
Switching Characteristics (Note4)						
Turn-On Delay Time	$T_{d(on)}$	V_{DD}=15V, I_D =20A, V_{GS}=10V, R_{GEN}=3Ω		12		nS
Rise Time	T_r			15		
Turn-Off Delay Time	$T_{d(off)}$			40		
Fall Time	T_f			14		
Total Gate Charge	Q_g	V_{DS}=15V, I_D =45A, V_{GS}=10V		60		pF
Gate-Source Charge	Q_{gs}			8.2		
Gate-Drain Charge	Q_{gd}			16.4		
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V, I_S=1A			1.2	V
Diode Forward Current (Note 2)	I_S				45	A
Reverse Recovery Time	t_{rr}	T_J = 25°C, I_F = 20A di/dt = 100A/μs(Note3)		29		nS
Reverse Recovery Charge	Q_{rr}			32		nC

Note：

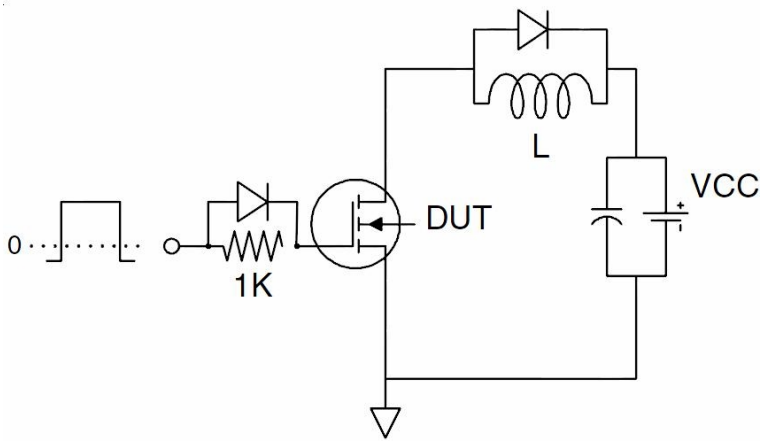
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production
5. EAS condition： T_j=25℃, V_{DD}=27V,V_G=10V,L=0.3mH, Rg=25Ω, I_{AS} =21A;

Test Circuit

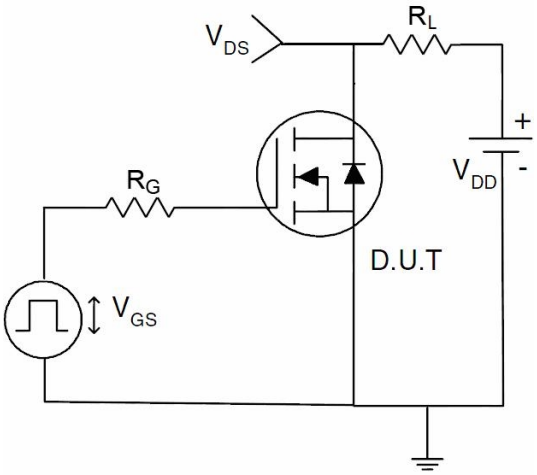
- EAS Test Circuits



- Gate Charge Test Circuit



- Switch Time Test Circuit



Typical Characteristics

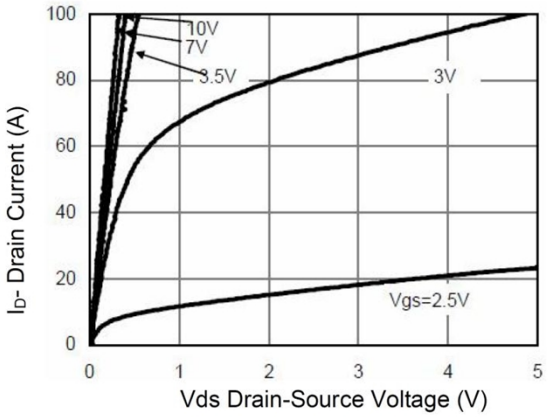


Figure 1 Output Characteristics

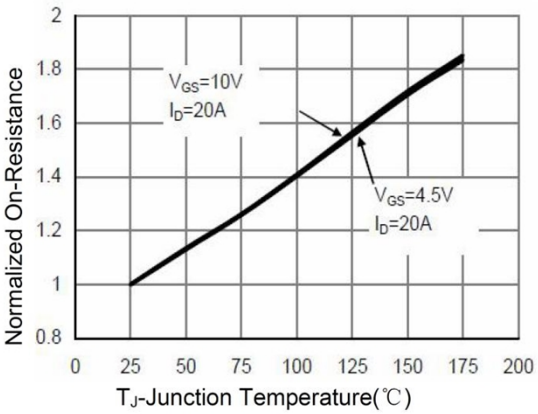


Figure 4 Rdson-Junction Temperature

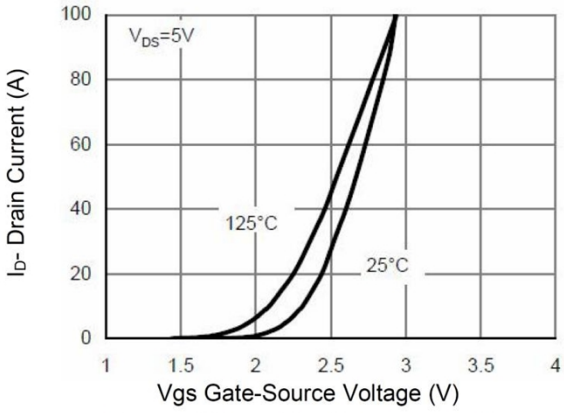


Figure 2 Transfer Characteristics

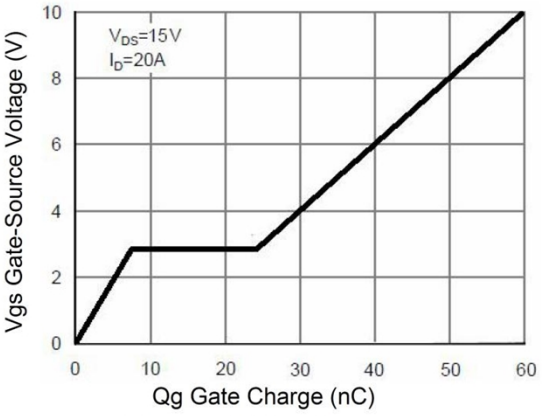


Figure 5 Gate Charge

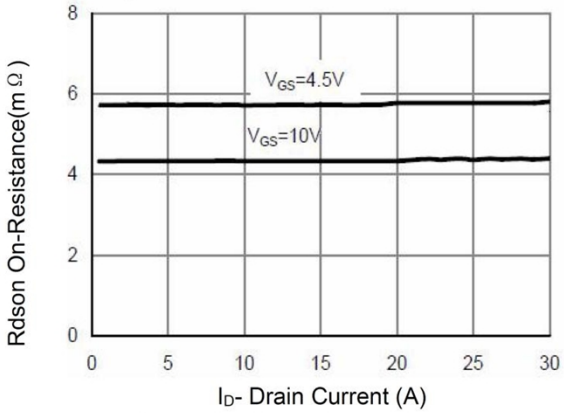


Figure 3 Rdson- Drain Current

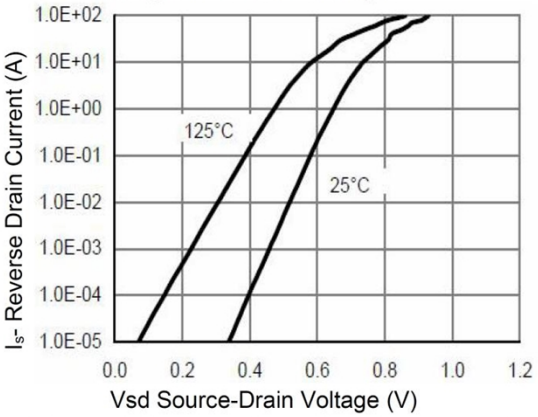


Figure 6 Source- Drain Diode Forward

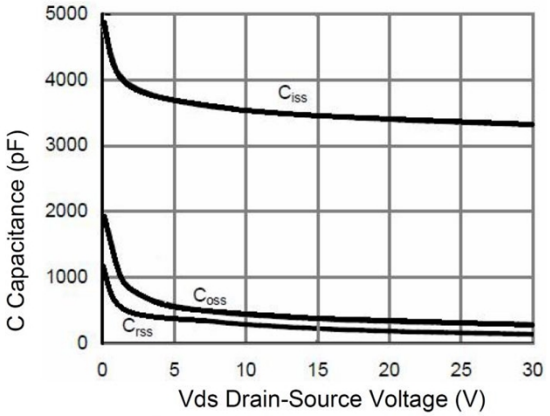


Figure 7 Capacitance vs Vds

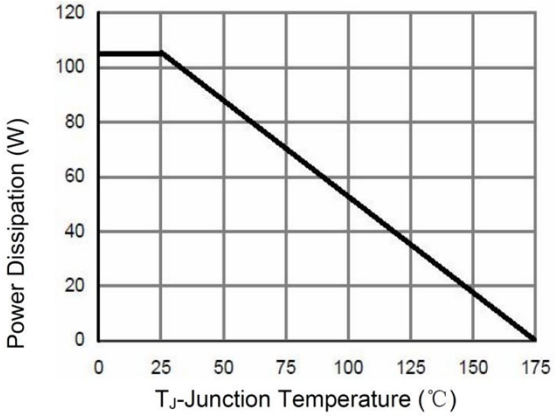


Figure 9 Power De-rating

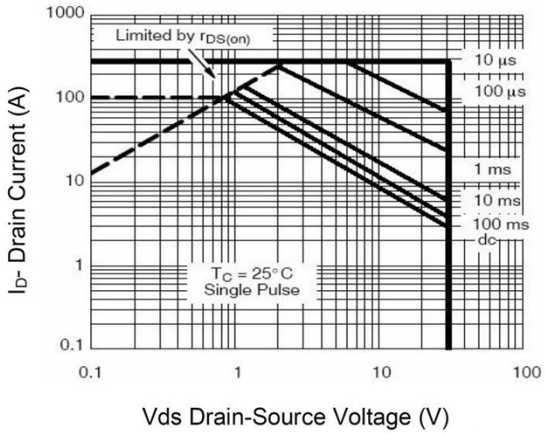


Figure 8 Safe Operation Area

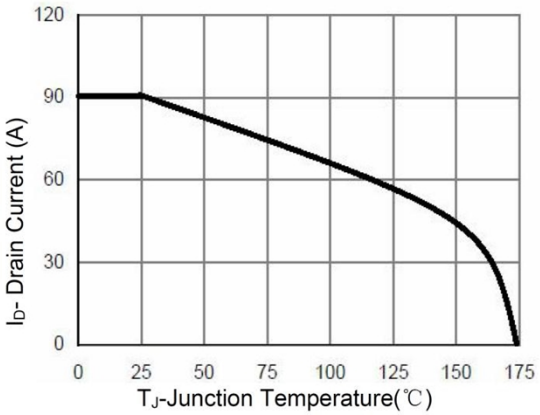


Figure 10 ID Current Derating

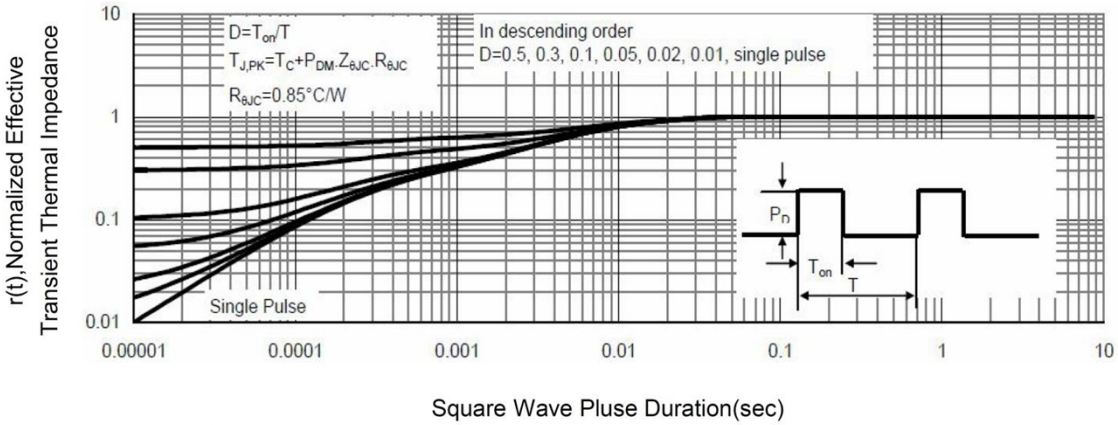
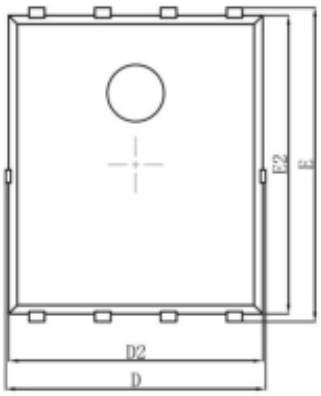
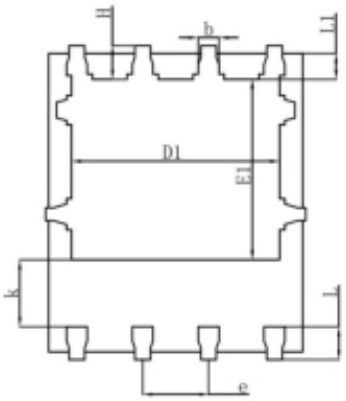


Figure 11 Normalized Maximum Transient Thermal Impedance

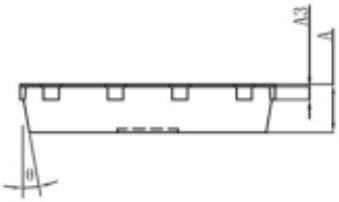
PDFN5X6-8L Package Information



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	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	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°