

Product Summary

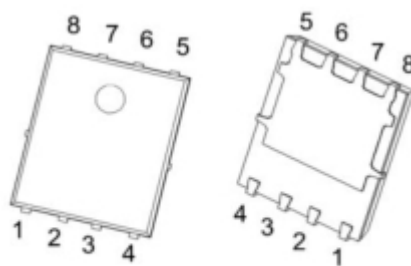
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	3mΩ@10V	90A
	4mΩ@4.5V	

Feature

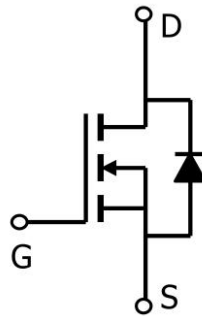
- Fast switching speed
- Surface mount package
- Reliable and Rugged
- ROHS Compliant & Halogen-Free

Application

- DC-DC Converters.
- Motor Control.
- Portable equipment application

Package

PDFN5X6-8L

Circuit diagram



Marking



40N03G
*

=Device Code
=Month Code

Absolute maximum ratings

(T_a=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	40	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ¹ (T _c =25°C)	I _D	90	A
Pulsed Drain Current ²	I _{DM}	360	A
Single Pulse Avalanche Energy ³	E _{AS}	376	mJ
Total Power Dissipation ⁴ (T _c =25°C)	P _D	61.4	W
Thermal Resistance Junction-Case ¹	R _{θJC}	2.04	°C/W
Storage Temperature Range	T _{STG}	-55 to 150	°C
Operating Junction Temperature Range	T _J	-55 to 150	°C

Electrical characteristics

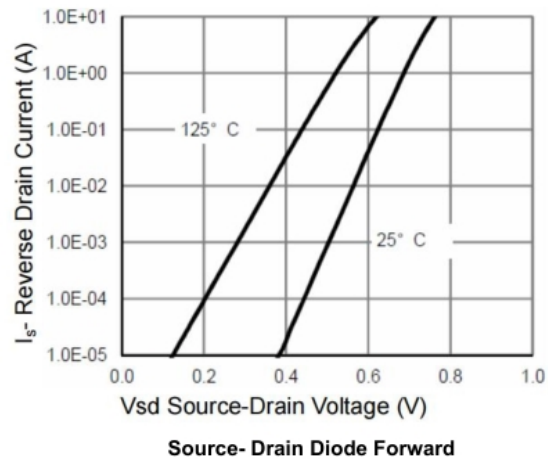
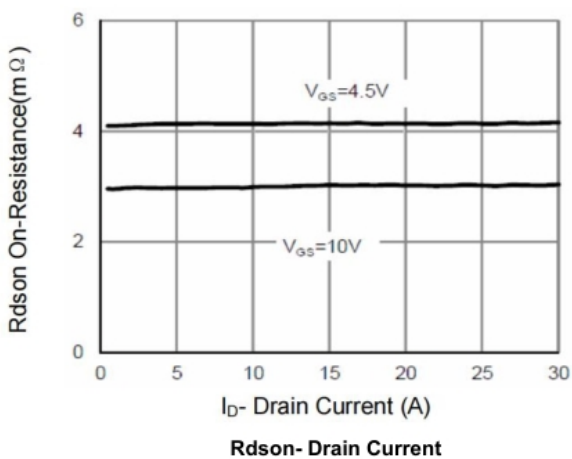
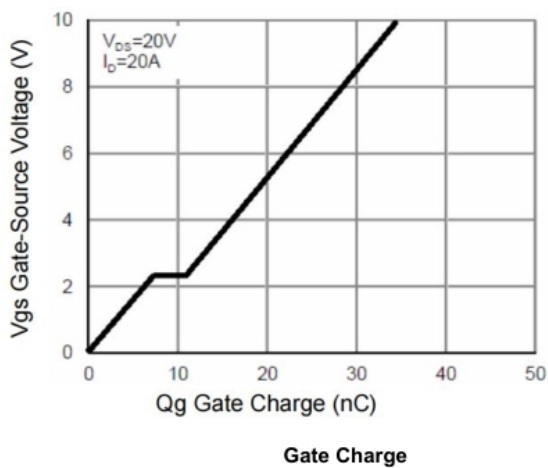
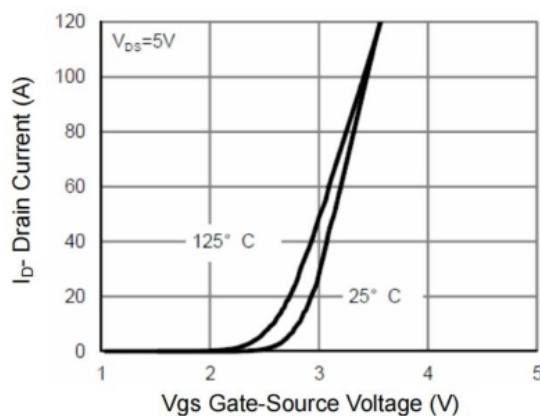
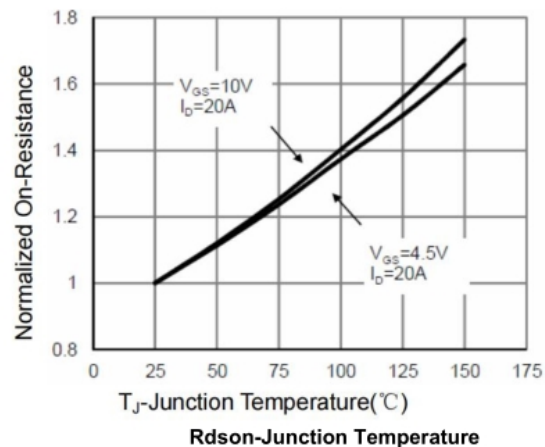
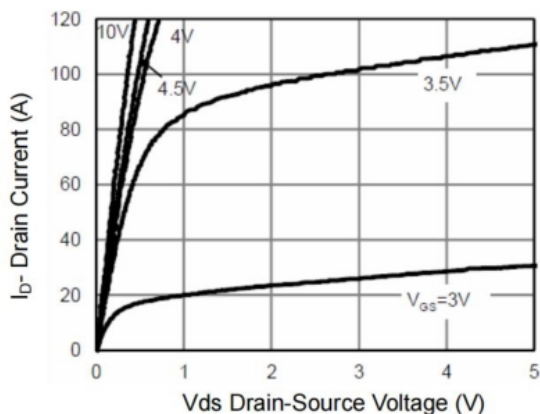
(T_A=25°C, unless otherwise noted)

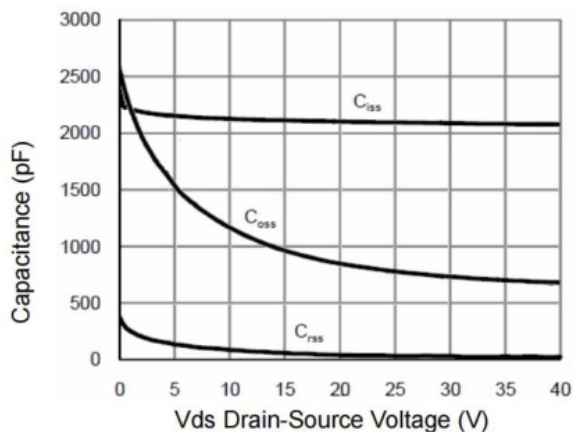
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV (BR)DSS	V _{GS} = 0V, I _D =250μA	40			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =32V,V _{GS} = 0V, T _J =25°C			1	uA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V , V _{DS} =0V			±100	uA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.5	2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =30A		3	3.7	mΩ
		V _{GS} =4.5V, I _D =30A		4	5.3	
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, f=1MHz		2800		pF
Output Capacitance	C _{oss}			720		
Reverse Transfer Capacitance	C _{rss}			40		
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} =20V, V _{GS} =10V, I _D =55A		46		pF
Gate-Source Charge	Q _{gs}			8		
Gate-Drain Charge	Q _{gd}			7.5		
Turn-On Delay Time	T _{d(on)}	V _{DD} =20V, V _{GS} =10V, R _G =1.6Ω, I _D =55A		10		nS
Rise Time	T _r			5		
Turn-Off Delay Time	T _{d(off)}			32		
Fall Time	T _f			5.5		
Diode Characteristics						
Diode Forward Voltage2	V _{SD}	V _{GS} =0V, I _S =1A, T _J =25°C			1.2	V

Note:

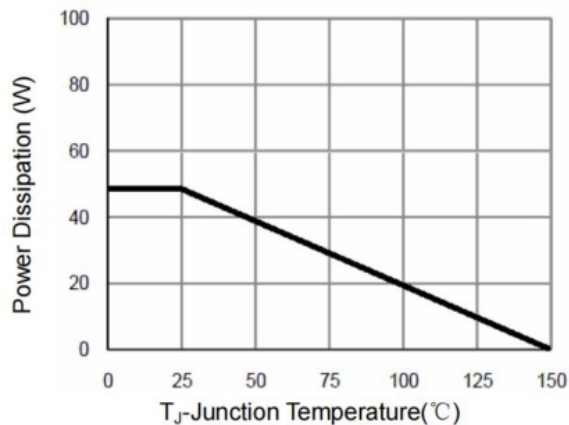
1. The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
2. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
3. The EAS data shows Max. rating . The test condition is V_{DD} = 20V, V_{GS} = 10V, L = 0.5mH, R_G = 25Ω

Typical Characteristics

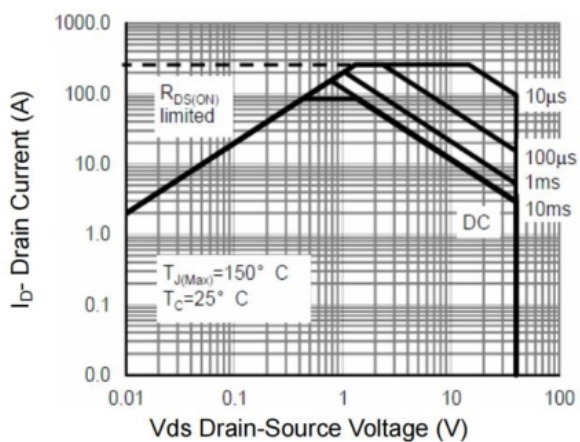




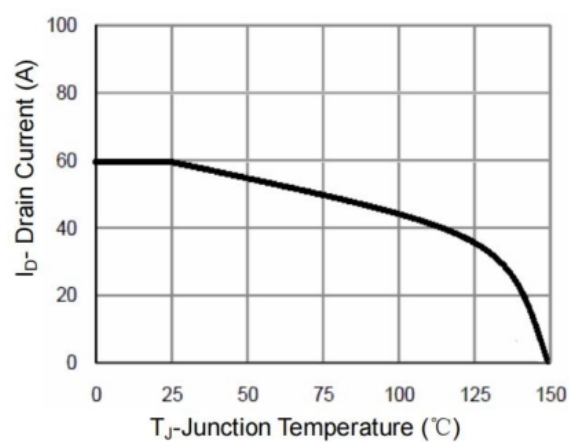
Capacitance vs Vds



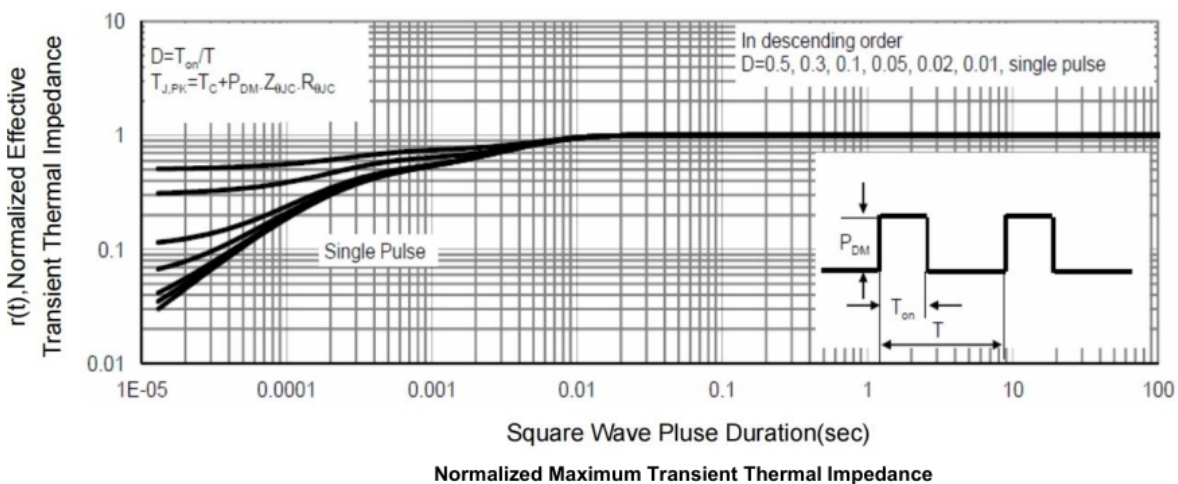
Power De-rating



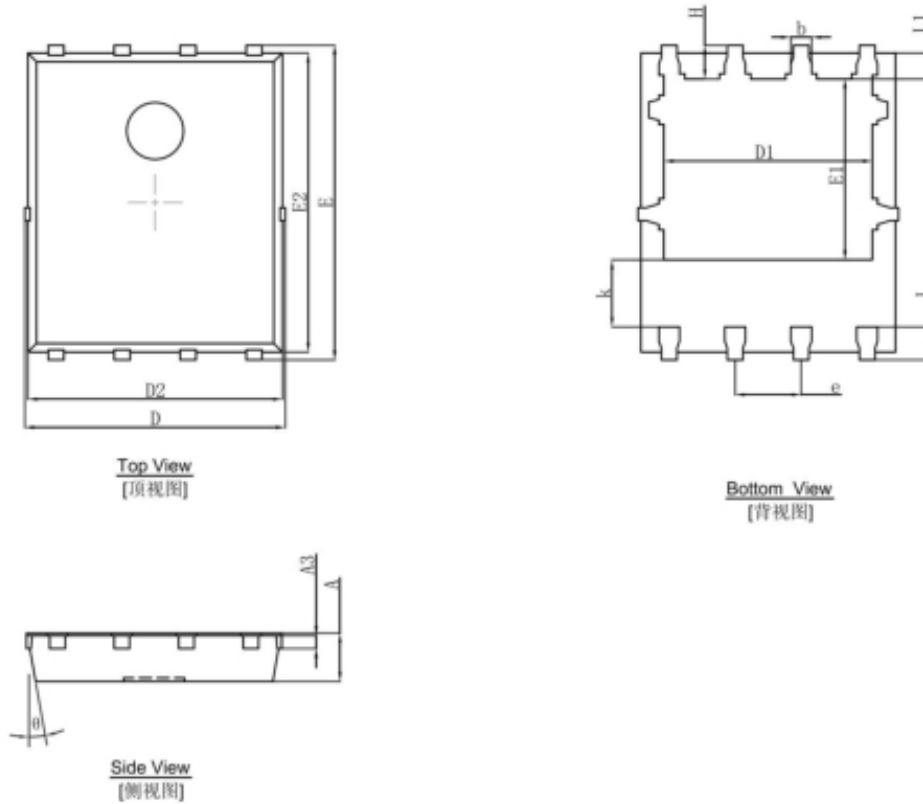
Safe Operation Area



Current De-rating



PDFN5X6-8L Package Information



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°