

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	16mΩ@10V	50A
	20mΩ@4.5V	

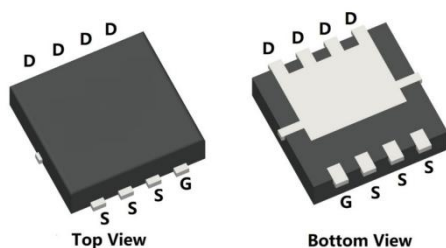
Feature

- Advanced trench technology
- Excellent $R_{DS(on)}$
- Low gate charge

Application

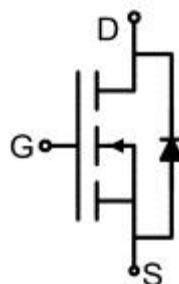
- Brushless motor
- Load switch
- Uninterruptible power supply

Package

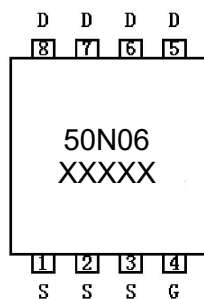


PDFN3.3*3.3-8L

Circuit diagram



Marking



Absolute maximum ratings (T_c=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	60	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ¹⁾ (V _{GS} =10V)	I _D	50	A
Continuous Drain Current ¹⁾ (V _{GS} =10V, T _c =100°C)	I _D (100 °C)	30	A
Pulsed Drain Current ²⁾	I _{DM}	90	A
Power Dissipation ⁴⁾	P _D	45	W
Single Pulse avalanche Energy ³⁾	E _{AS}	39.2	mJ
Thermal Resistance, Junction-to-Case ¹⁾	R _{θJC}	2.8	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	60			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =48V, 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	1.2	1.8	2.5	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} =10V, I _D =20A		11	16	mΩ
		V _{GS} =4.5V, I _D =10A		16	20	
Dynamic characteristics ⁶⁾						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f =1MHz		2423		pF
Output Capacitance	C _{oss}			145		
Reverse Transfer Capacitance	C _{rss}			97		
Total Gate Charge	Q _g	V _{DS} =48V, V _{GS} =4.5V I _D =15A		19.3		nC
Gate-Source Charge	Q _{gs}			7.1		
Gate-Drain Charge	Q _{gd}			7.6		
Turn-on delay time	t _{d(on)}	V _{DS} =30V, V _{GS} =10V R _G =3.3Ω, I _D =15A		7.2		nS
Turn-on rise time	t _r			50		
Turn-off delay time	t _{d(off)}			36.4		
Turn-off fall time	t _f			7.6		
Source-Drain Diode characteristics						
Diode Forward Current ^{1,5)}	I _S	V _D =V _G =0V, Force Current			35	A
Diode Forward voltage ²⁾	V _{SD}	V _{GS} =0V, I _S =1A			1.0	V
Reverse Recovery Time	T _{rr}	I _F =15A, di/dt =100A/μs		16.3		nS
Reverse Recovery Charge	Q _{rr}			11		nC

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ 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}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=38A.
- 4) The power dissipation is limited by 150°C junction temperature.
- 5) The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.
- 6) Guaranteed by design, not subject to production.

Typical Characteristics

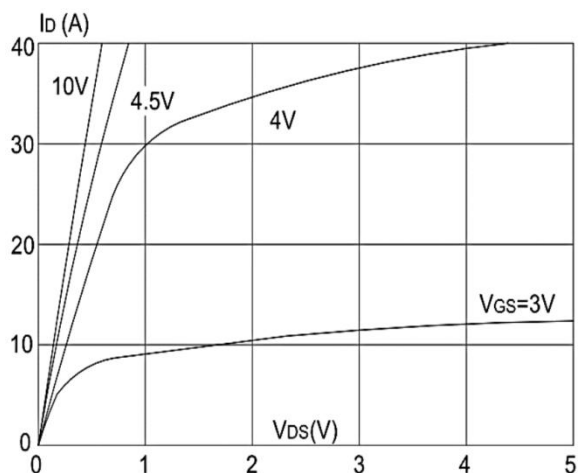


Figure 1: Output Characteristics

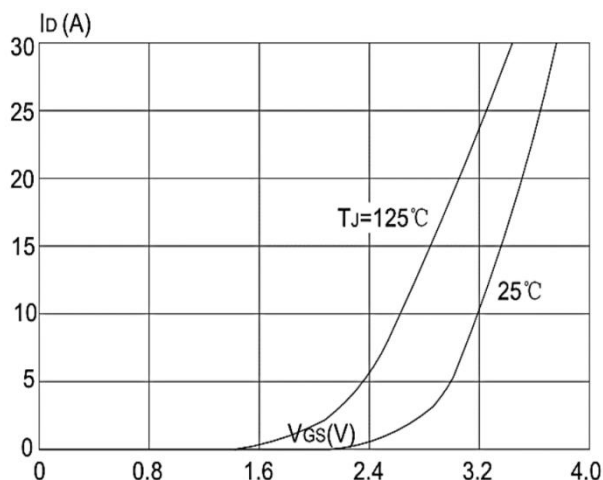


Figure 2: Typical Transfer Characteristics

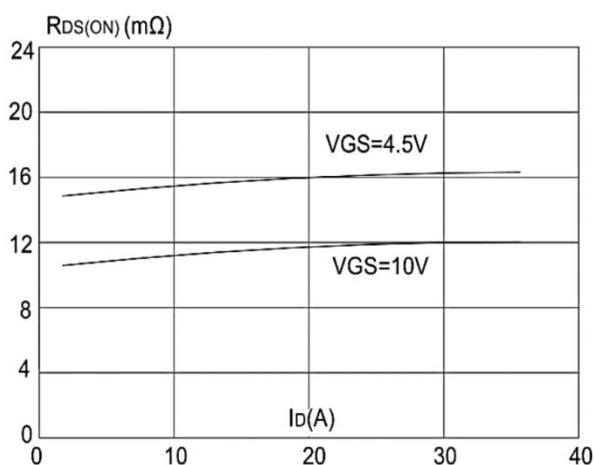


Figure 3: On-resistance vs. Drain Current

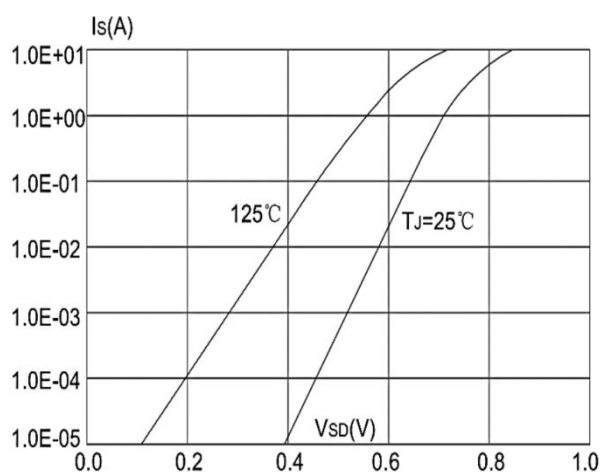


Figure 4: Body Diode Characteristics

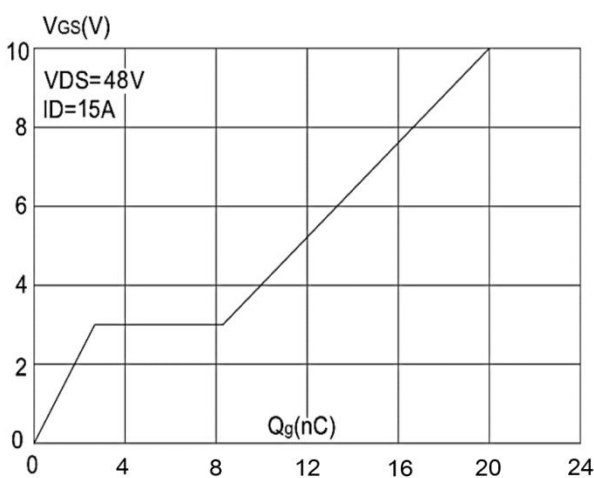


Figure 5: Gate Charge Characteristics

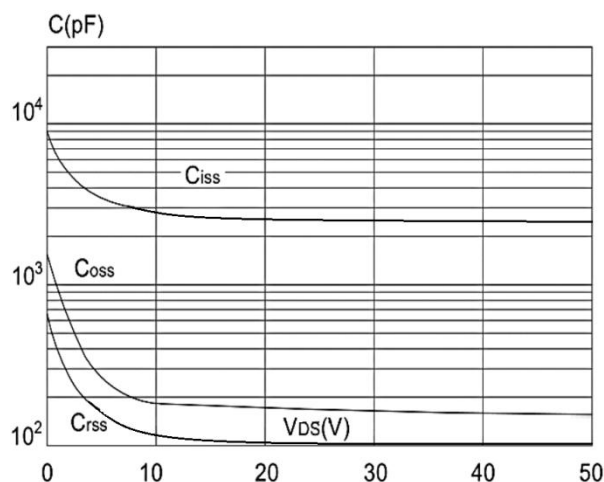


Figure 6: Capacitance Characteristics

Typical Characteristics

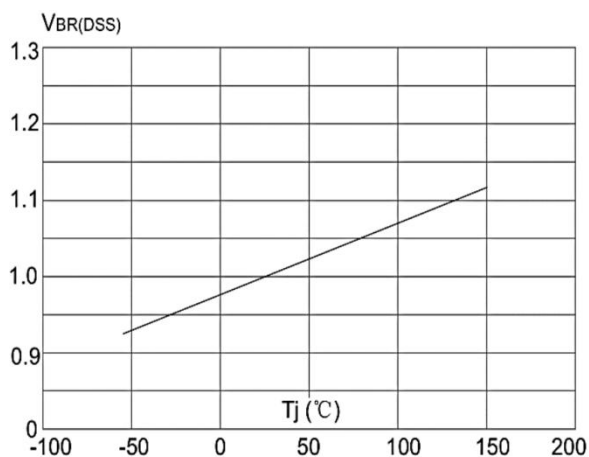


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

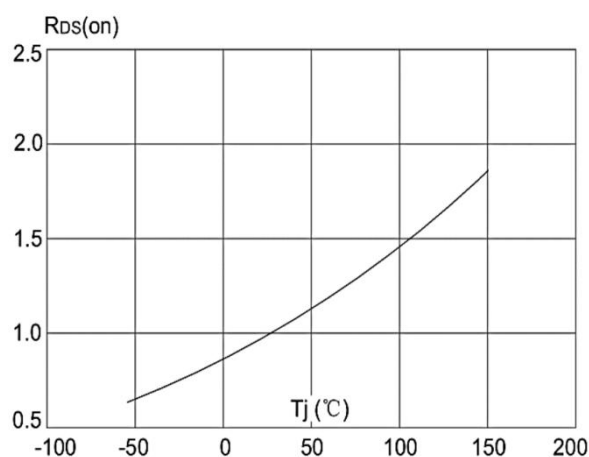


Figure 8: Normalized on Resistance vs. Junction Temperature

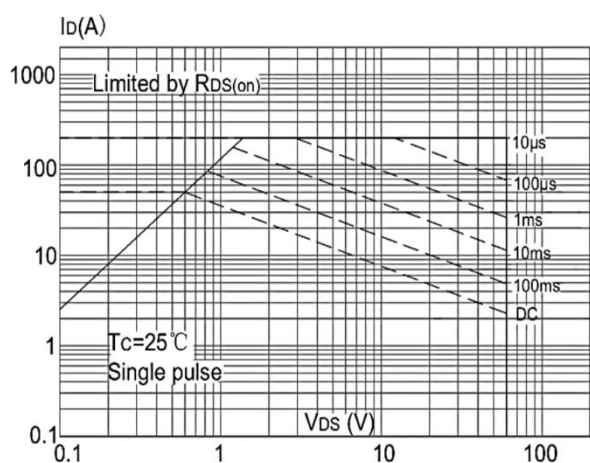


Figure 9: Maximum Safe Operating Area

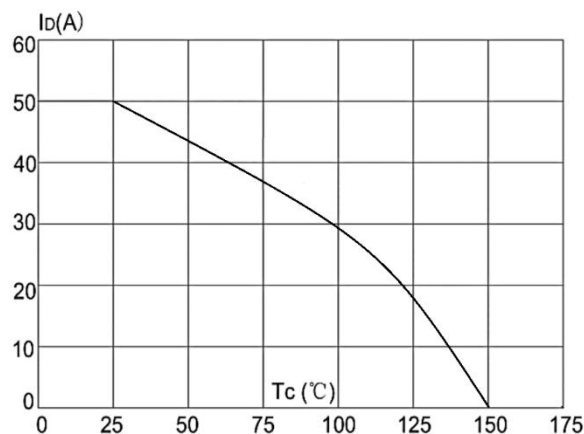


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

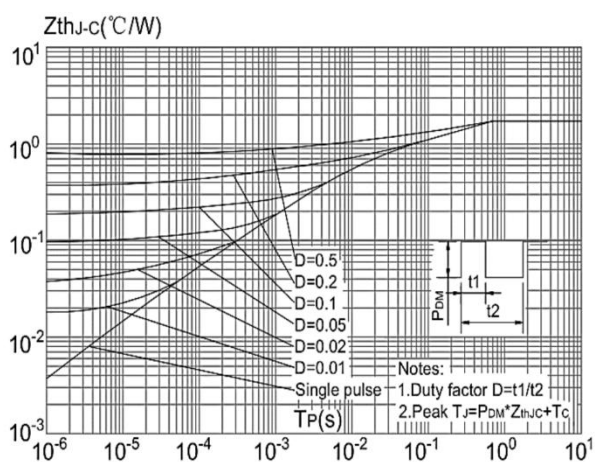
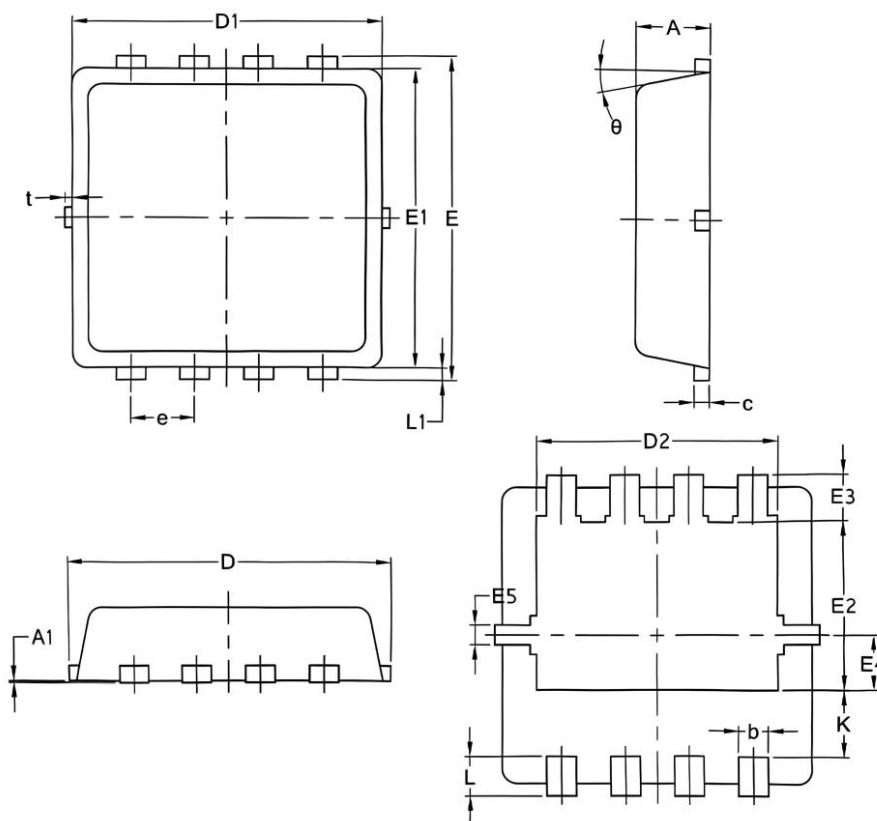


Figure.11: Maximum Effective Transient Thermal

PDFN3.3*3.3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.850	0.028	0.033
A1	-	0.050	-	0.002
b	0.200	0.400	0.008	0.016
c	0.100	0.250	0.004	0.010
D	3.150	3.450	0.124	0.136
D1	3.000	3.250	0.118	0.128
D2	2.290	2.650	0.090	0.104
E	3.150	3.450	0.124	0.136
E1	2.900	3.200	0.114	0.126
E2	1.540	1.940	0.061	0.076
E3	0.280	0.650	0.011	0.026
E4	0.370	0.770	0.015	0.030
E5	0.100	0.300	0.004	0.012
e	0.600	0.700	0.024	0.028
K	0.590	0.890	0.023	0.035
L	0.300	0.500	0.012	0.020
L1	0.060	0.200	0.002	0.008
t	0.000	0.130	0.000	0.005
θ	10°	14°	10°	14°