

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	18mΩ@10V	50A
	22mΩ@4.5V	

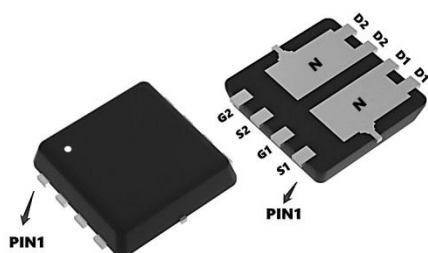
Feature

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

Application

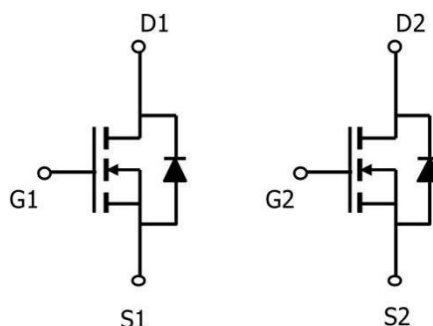
- Battery protection
- Load switch
- Uninterruptible power supply

Package

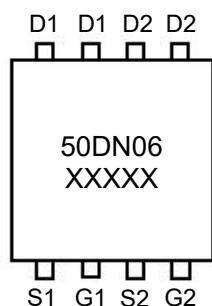


PDFN3.3*3.3-8L

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 =70°C)	I _D (70°C)	18	A
Pulsed Drain Current ²⁾	I _{DM}	150	A
Single Pulse avalanche Energy ³⁾	E _{AS}	24.5	mJ
Power Dissipation ⁴⁾	P _D	25	W
Thermal Resistance Junction to Case ¹⁾	R _{θJC}	5	°C/W
Operating Junction Temperature	T _J	-55 ~ +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} =60V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.2	1.7	2.5	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} =10V, I _D =20A		13	18	mΩ
		V _{GS} =4.5V, I _D =10A		18	22	
Dynamic characteristics ⁵⁾						
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f =1MHz		529		pF
Output Capacitance	C _{oss}			158		
Reverse Transfer Capacitance	C _{rss}			9.5		
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10V, I _D =20A		10		nC
Gate-Source Charge	Q _{gs}			1.6		
Gate-Drain Charge	Q _{gd}			2.5		
Turn-on delay time	t _{d(on)}	V _{DS} =30V, V _{GS} =10V, I _D =20A R _G =1.5Ω		4.3		nS
Turn-on rise time	t _r			4.8		
Turn-off delay time	t _{d(off)}			10.2		
Turn-off fall time	t _f			3.6		
Source-Drain Diode characteristics						
Diode Forward Current	I _S	T _A =25°C			50	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =20A			1.2	V
Reverse Recovery Time	T _{rr}	I _F =20A, di/dt =100A/μs		20		nS
Reverse Recovery Charge	Q _{rr}			8.5		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 ≤ 300μs, duty cycle ≤ 2%.
- 3) The EAS data shows Max. rating. The test condition is V_{DS}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=11A.
- 4) The power dissipation is limited by 150°C junction temperature.
- 5) Guaranteed by design, not subject to production.

Typical Characteristics

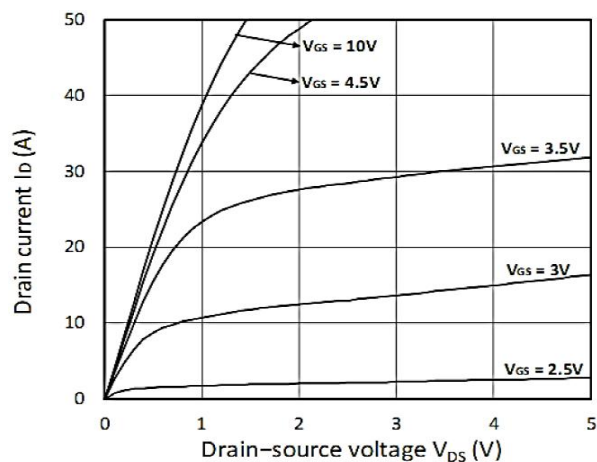


Figure 1. Output Characteristics

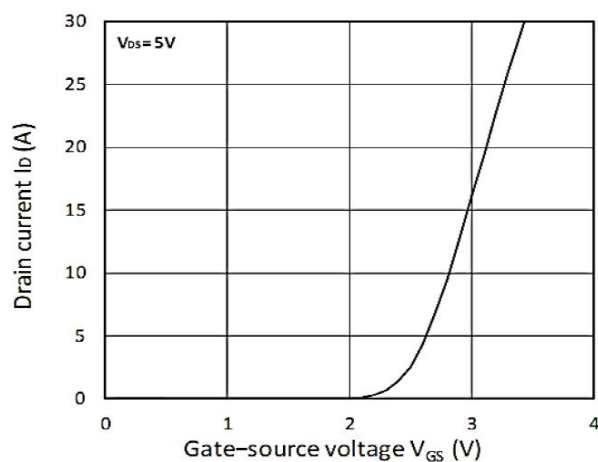


Figure 2. Transfer Characteristics

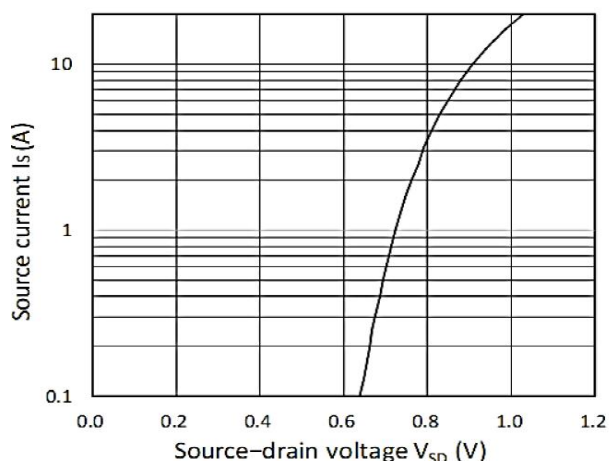


Figure 3. Forward Characteristics of Reverse

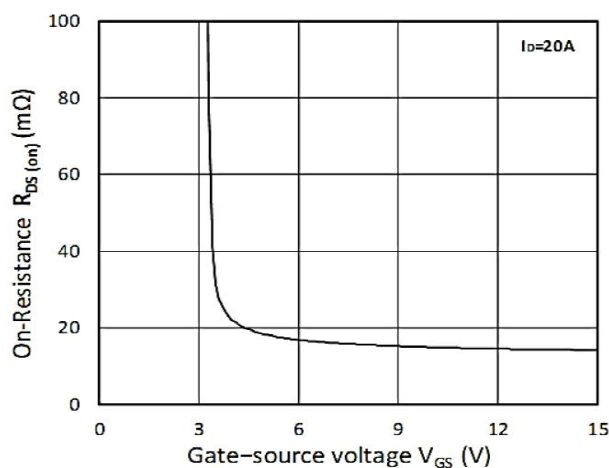


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

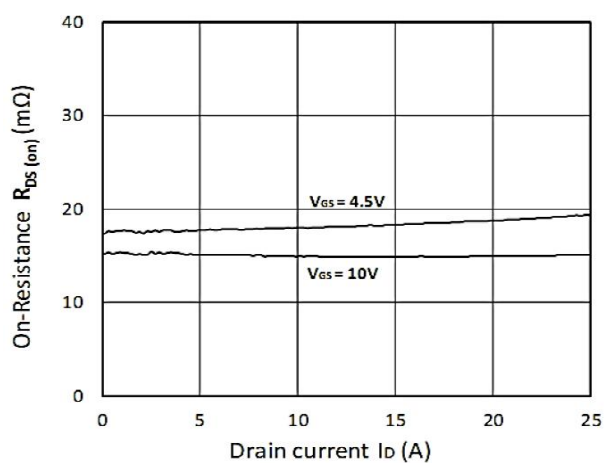


Figure 5. $R_{DS(ON)}$ vs. I_D

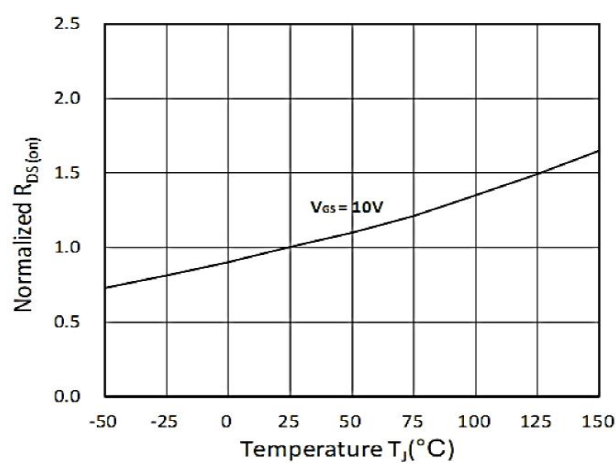


Figure 6. Normalized $R_{DS(ON)}$ vs. Temperature

Typical Characteristics

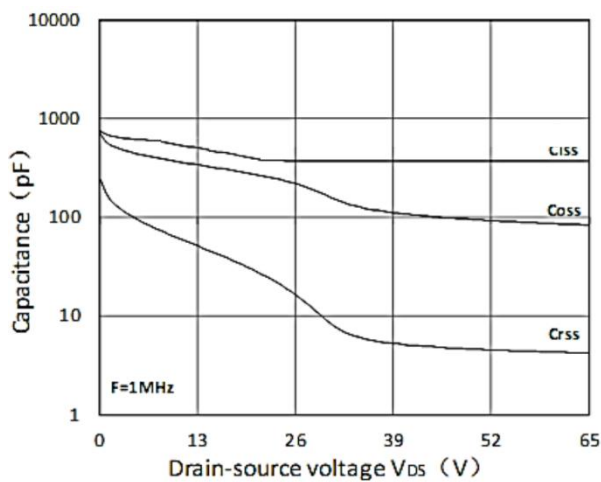


Figure 7. Capacitance Characteristics

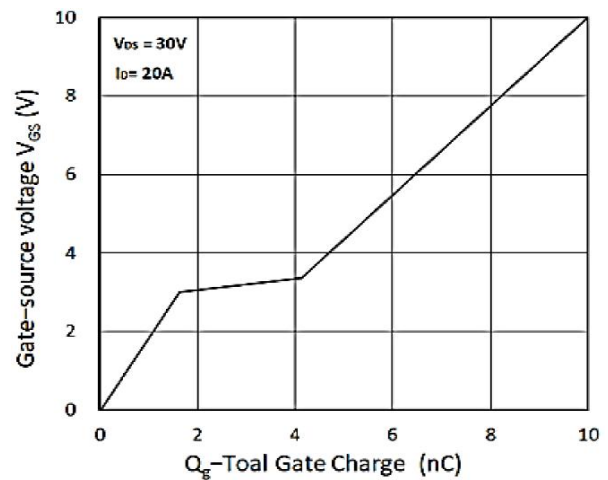


Figure 8. Gate Charge Characteristics

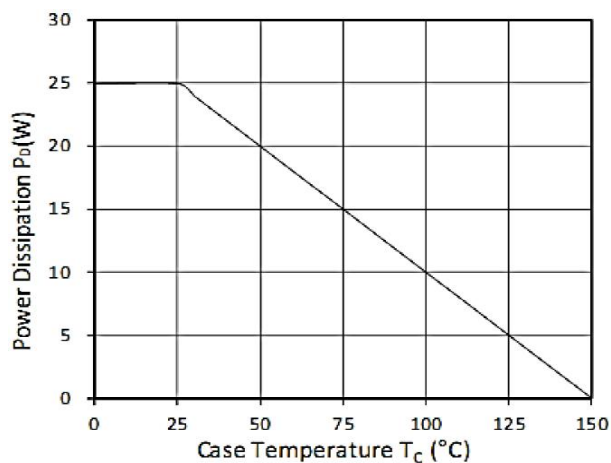


Figure 9. Power Dissipation

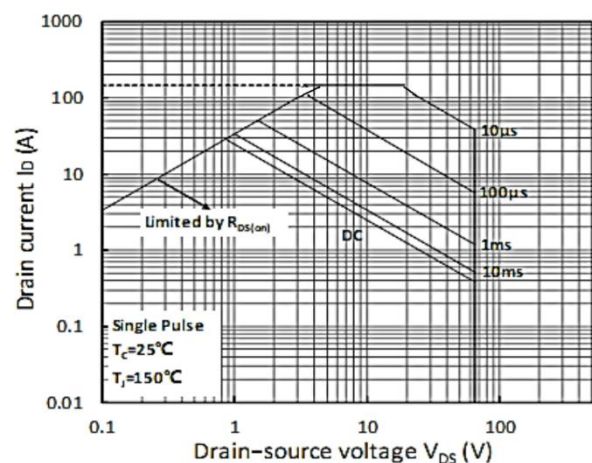


Figure 10. Safe Operating Area

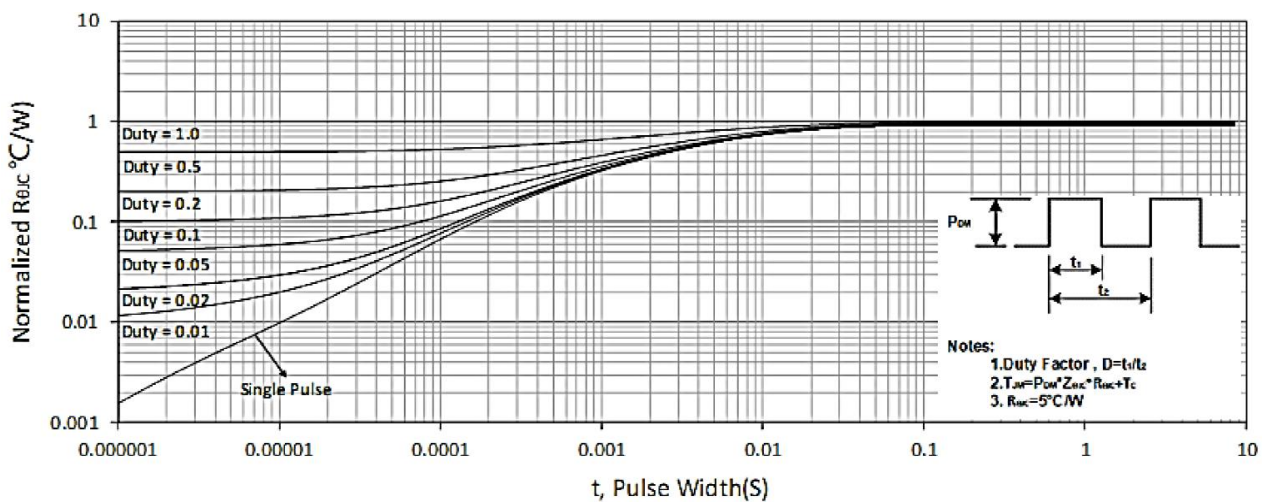
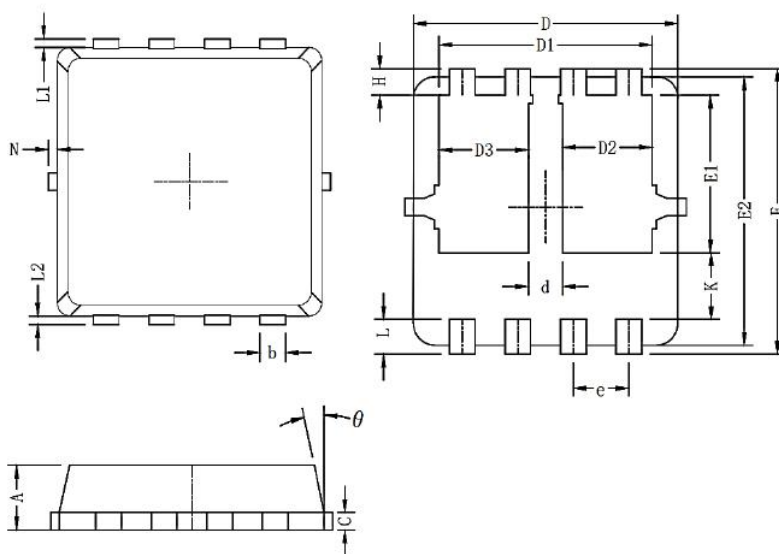


Figure 11. Normalized Maximum Transient Thermal Impedance

PDFN3.3*3.3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.600	0.900	0.024	0.035
b	0.200	0.400	0.008	0.016
C	0.150	0.250	0.006	0.010
D	3.000	3.200	0.118	0.126
D1	2.300	2.600	0.091	0.102
D2/D3	0.800	1.200	0.031	0.047
E	3.150	3.450	0.124	0.136
E1	1.430	1.930	0.056	0.076
E2	2.900	3.200	0.114	0.126
e	0.650 BSC.		0.260 BSC.	
H	0.200	0.500	0.008	0.020
K	0.570	0.870	0.022	0.034
L	0.300	0.500	0.012	0.020
L1/L2	0.100 REF.		0.004 REF.F	
θ	8°	13°	8°	13°
N	0.000	0.150	0.000	0.006
d	0.300	0.500	0.012	0.020