



20V/12A N-Channel Advanced Power MOSFET

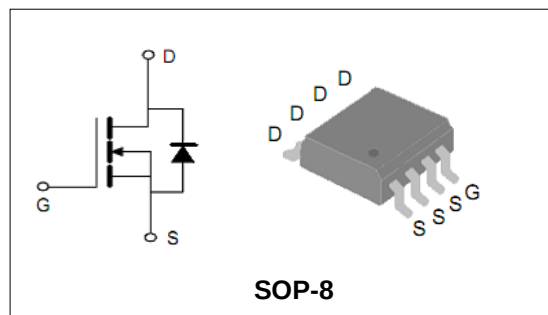
Features

- Lead free and Green Device Available
- Low Rds-on to Minimize Conductive Loss
- SOP8 Package

BVDSS	20	V
ID	12	A
RDSON@VGS=4.5V	5.4	mΩ
RDSON@VGS=2.5V	7.6	mΩ

Applications

- Low Side Load Switch
- Battery Switch
- Optimized for Power Management Applications for Portable Products, such as Aeromodelling, Power bank, Brushless motor, Main board , and Others



Order Information

Product	Package	Marking	Reel Size	Reel	Carton
PTS2012	SOP-8	PTS2012	13inch	3000PCS	48000PCS

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit	
Common Ratings (TC=25°C Unless Otherwise Noted)					
V _{(BR)DSS}	Drain-Source Breakdown Voltage		20	V	
V _{GS}	Gate-Source Voltage		±12	V	
T _J	Maximum Junction Temperature		150	°C	
T _{STG}	Storage Temperature Range		-55 to 150	°C	
I _S	Diode Continuous Forward Current	TA =25°C	12	A	
Mounted on Large Heat Sink					
I _{DM}	Pulse Drain Current Tested (Sillicon Limit)	(Note1)	TA =25°C	40	A
I _D	Continuous Drain current		TA =25°C	12	A
P _D	Maximum Power Dissipation		TA =25°C	2	W
R _{θJA}	Thermal Resistance Junction-to-Ambient		(Note2)	62.5	°C/W



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Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
V _{(BR)DSS}	Drain- Source Breakdown Voltage	VGS=0V ID=250μA	20	--	--	V
I _{DSS}	Zero Gate Voltage Drain current	VDS=20V,VGS=0V	--	--	1	μA
I _{GSS}	Gate-Body Leakage Current	VGS=±12V,VDS=0V	--	--	±100	nA
V _{GS(TH)}	Gate Threshold Voltage	VDS=VGS,ID=250μA	0.45	--	1.2	V
R _{DS(ON)}	Drain-Source On-State Resistance (Note3)	VGS=4.5V, ID=12A	--	5.4	9	mΩ
		VGS=2.5V, ID=8A	--	7.6	11	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated) (Note4)						
C _{iss}	Input Capacitance	VDS=10V, VGS=0V, F=1MHz	--	1560	--	pF
C _{oss}	Output Capacitance		--	229	--	pF
C _{rss}	Reverse Transfer Capacitance		--	158	--	pF
Q _g	Total Gate Charge	VDS=10V, ID=6A, VGS=10V	--	39	--	nC
Q _{gs}	Gate-Source Charge		--	10	--	nC
Q _{gd}	Gate-Drain Charge		--	8.6	--	nC
Switching Characteristics (Note4)						
t _{d(on)}	Turn-on Delay Time	VDS=10V, ID=6A, RG=1Ω, VGS=4.5V	--	23	--	nS
t _r	Turn-on Rise Time		--	14	--	nS
t _{d(off)}	Turn-off Delay Time		--	23	--	nS
t _f	Turn-off Fall Time		--	15	--	nS
Source- Drain Diode Characteristics@ TJ = 25°C (unless otherwise stated)						
V _{SD}	Forward on voltage	IS=8A,VGS=0V	--	--	1.2	V

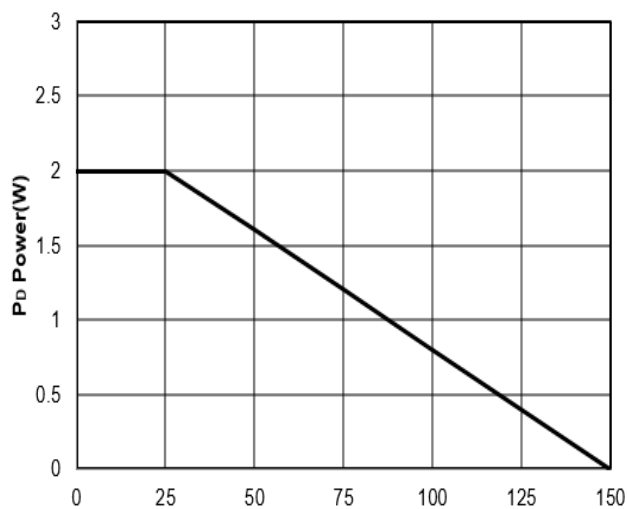
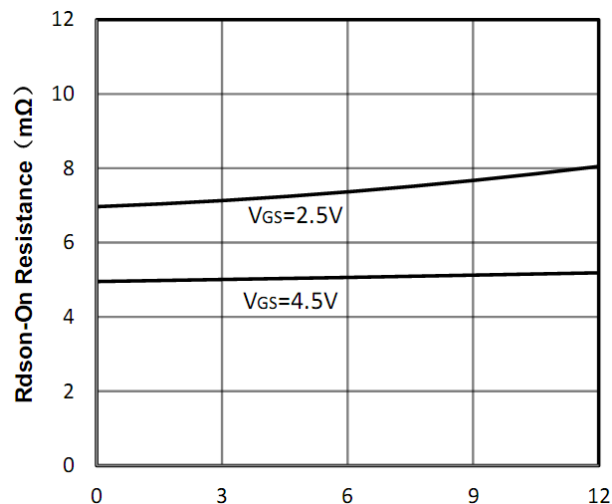
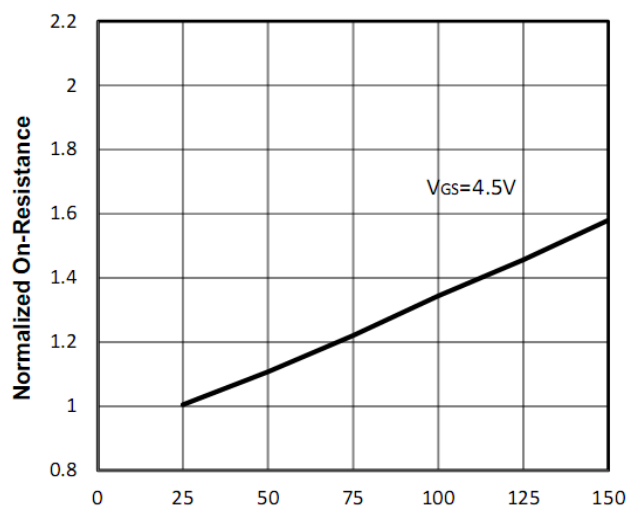
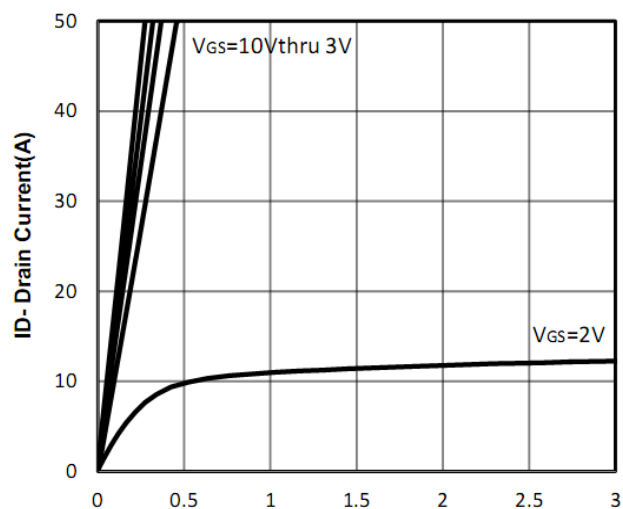
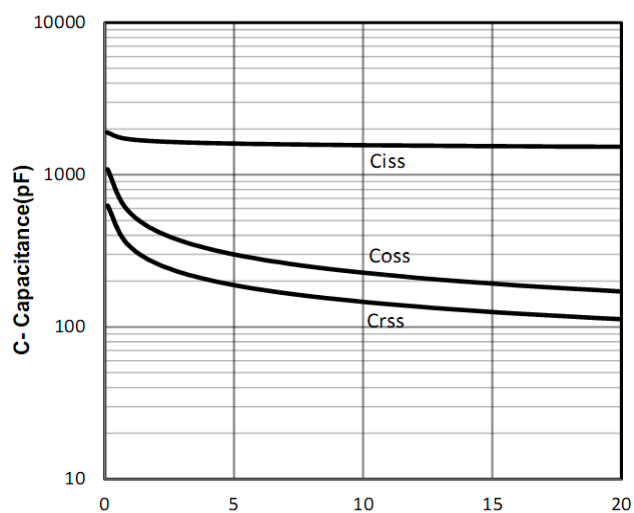
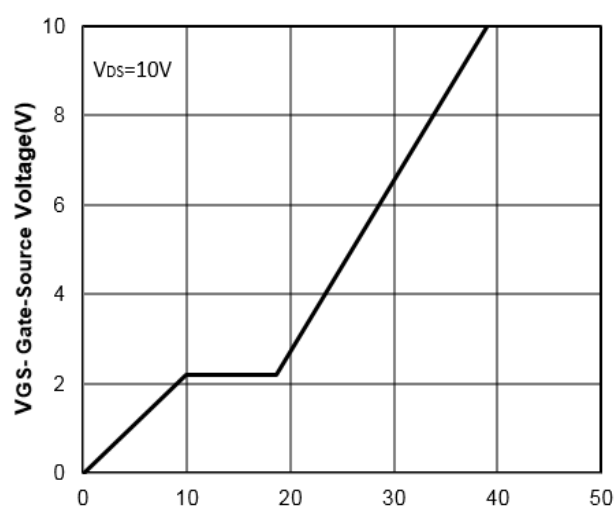
Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: pulse width ≤ 300 us, duty cycle ≤ 2%.
4. Guranteed by design, not subject to production testing.



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Typical Characteristics

Figure1: T_J -Junction Temperature (°C)Figure2: I_D -Drain Current (A)Figure3: T_J -Junction Temperature (°C)Figure4: V_{DS} -Drain Source Voltage (V)Figure5: V_{DS} -Drain Source Voltage (V)Figure6: Q_g -Gate Charge (nC)



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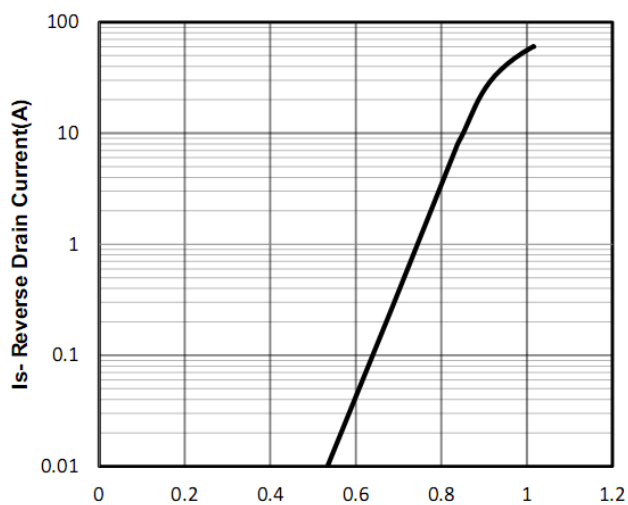


Figure7: Vsd -Source Drain Voltage (V)

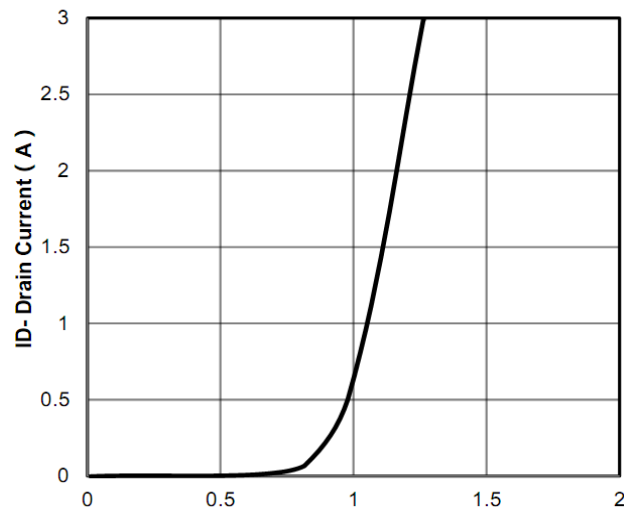


Figure8: Vgs -Gate Source Voltage (V)

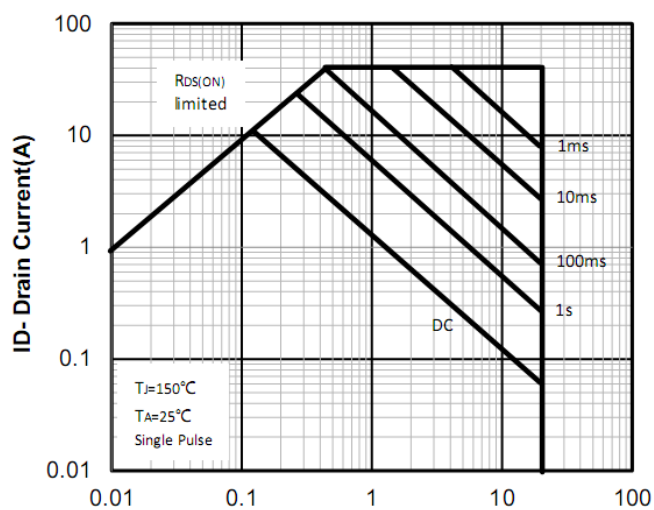


Figure9: Vsd Drain -Source Voltage (V)

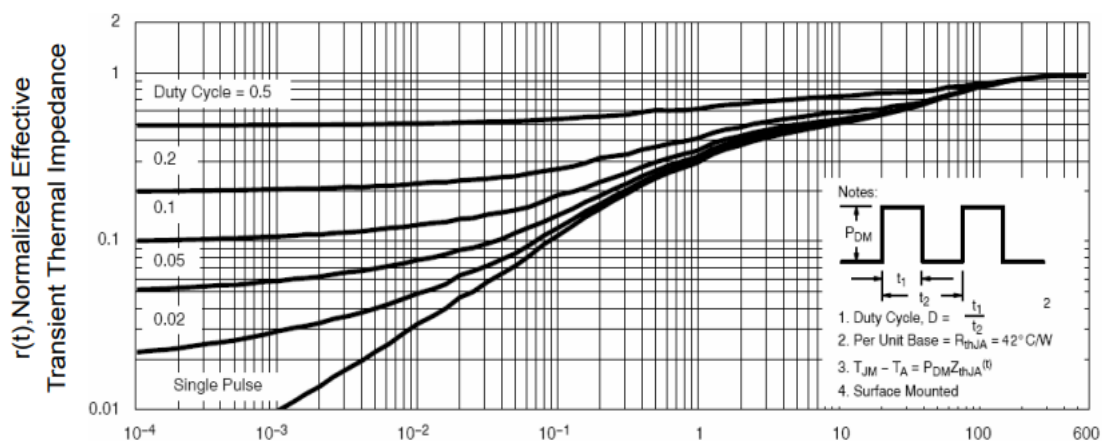


Figure10: Square Wave Pulse Duration (sec)



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Test Circuit and Waveform:

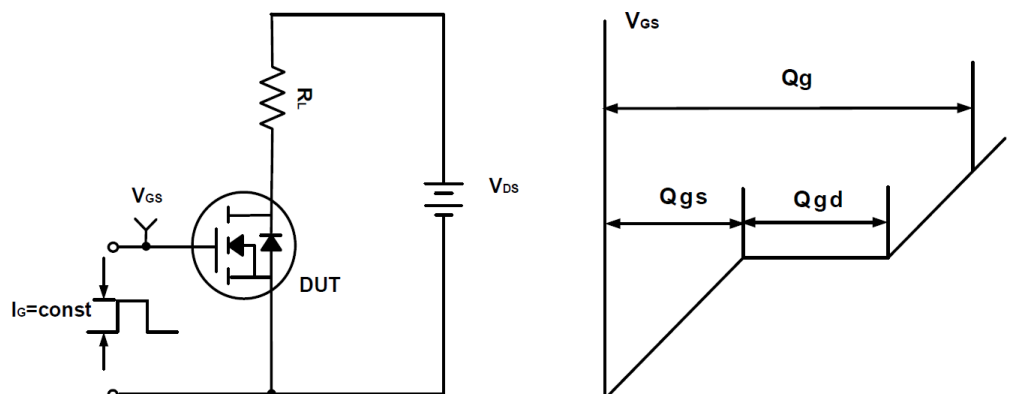


Figure A Gate Charge Test Circuit & Waveforms

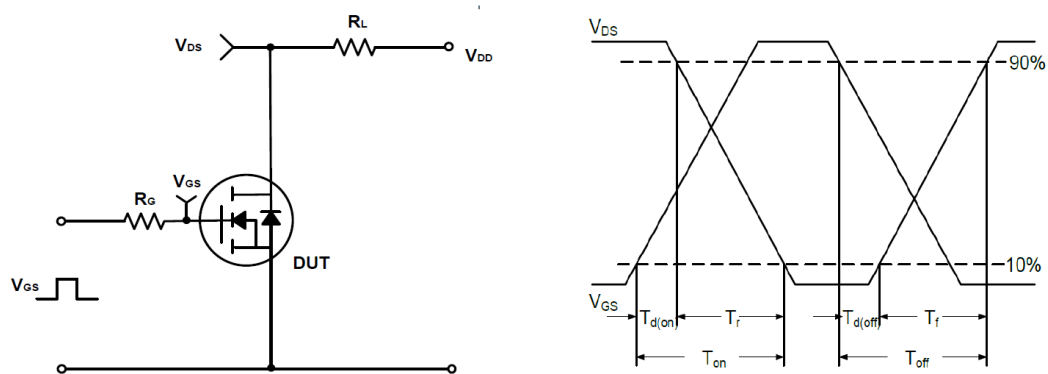
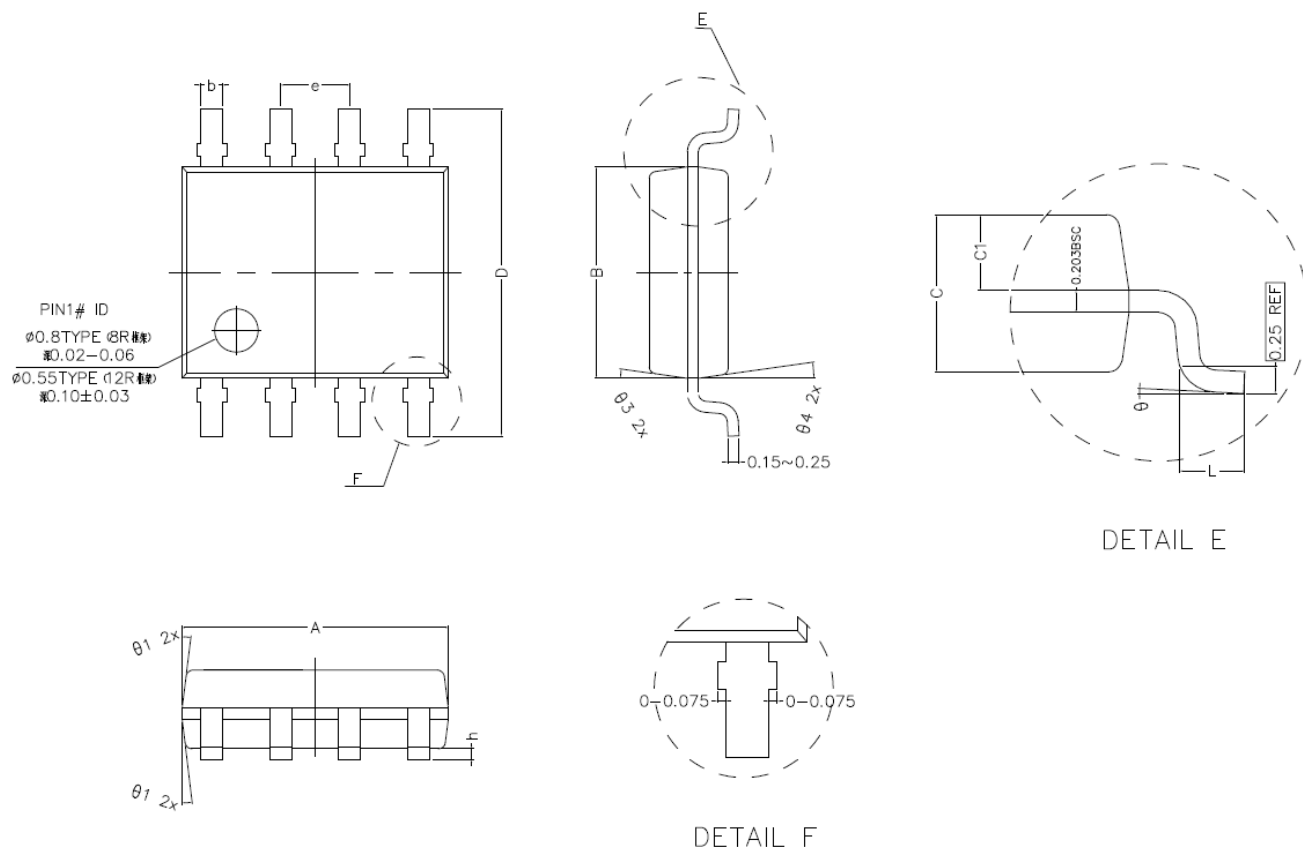


Figure B Switching Test Circuit & Waveforms



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SOP-8 Package Outline Dimensions (Units: mm)



COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A	4.800	4.900	5.000
B	3.800	3.900	4.000
C	1.350	1.450	1.550
C1	0.650	0.700	0.750
D	5.900	6.100	6.300
L	0.500	0.600	0.700
b	0.350	0.400	0.450
h	0.050	0.150	0.250
e	1.270TYPE		
θ_1	7° TYPE(8R) 12° TYPE(12R)		
θ_2	7° TYPE(8R) 10° TYPE(12R)		
θ_3	8° TYPE(8R) 12° TYPE(12R)		
θ_4	8° TYPE(8R) 10° TYPE(12R)		
θ	0° ~ 8°		