

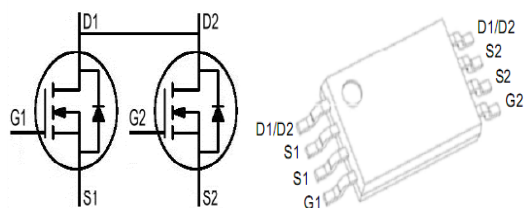
20V/10A N-Channel Advanced Power MOSFET

Features

- High power and current handing capability
- Lead free product is acquired
- Surface mount package

Applications

- PWM application
- Load switch



TSSOP-8

BVDSS	20	V
ID	10	A
RDSON@VGS=4.5V	10	mΩ
RDSON@VGS=2.5V	12.5	mΩ

Order Information

Product	Package	Marking	Reel Size	Reel	Carton
MSPT2012	TSSOP-8	PT2012	13inch	5000PCS	50000PCS

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	10	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	10	A
P_D	Maximum Power Dissipation	TA =25°C	2	W
$R_{\theta Ja}$	Thermal Resistance Junction-to-Ambient (Note2)		62.5	°C/W

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	0.5	--	1	V
R _{DS(ON)}	Drain-Source On-State Resistance (Note3)	VGS=4.5V, ID=6A	--	10	12	mΩ
		VGS=2.5V, ID=5A	--	12.5	15	
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated) (Note4)						
C _{iss}	Input Capacitance	VDS=10V, VGS=0V, F=1MHz	--	1280	--	pF
C _{oss}	Output Capacitance		--	177	--	pF
C _{rss}	Reverse Transfer Capacitance		--	159	--	pF
Q _g	Total Gate Charge	VDS=10V, ID=6A, VGS=4.5V	--	17	--	nC
Q _{gs}	Gate-Source Charge		--	0.9	--	nC
Q _{gd}	Gate-Drain Charge		--	3.6	--	nC
Switching Characteristics (Note4)						
t _{d(on)}	Turn-on Delay Time	VDD=10V, ID=6A, VGS=4.5V RG=3Ω	--	6.7	--	nS
t _r	Turn-on Rise Time		--	15	--	nS
t _{d(off)}	Turn-off Delay Time		--	58	--	nS
t _f	Turn-off Fall Time		--	18	--	nS
Source- Drain Diode Characteristics@ TJ = 25°C (unless otherwise stated)						
V _{SD}	Forward on voltage	IS=6A,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.

Typical Characteristics

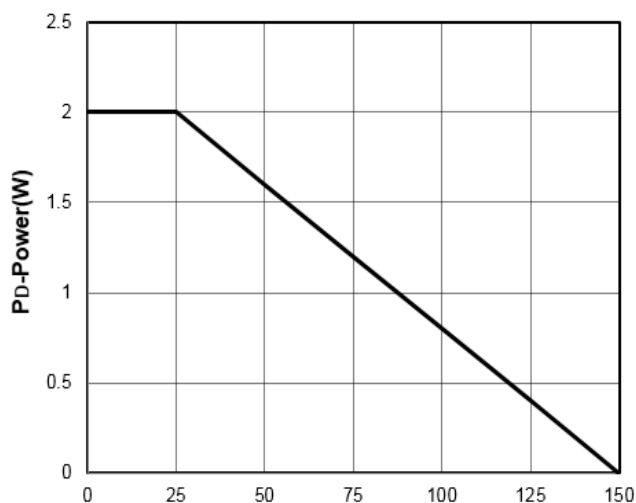


Figure1: T_j Junction Temperature (°C)

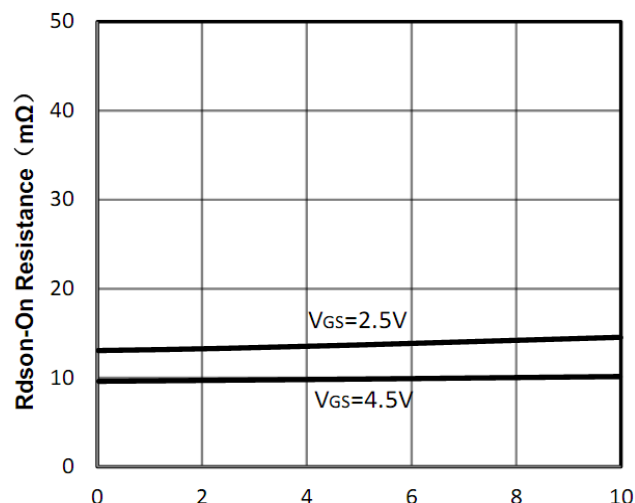


Figure2: I_d Drain Current (A)

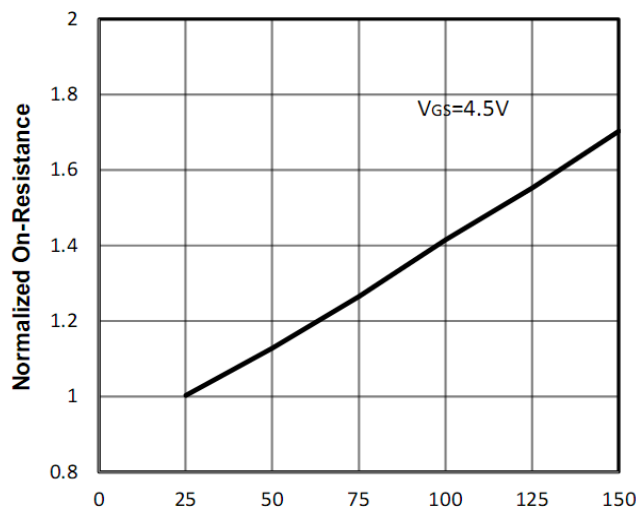


Figure3: T_j Junction Temperature (°C)

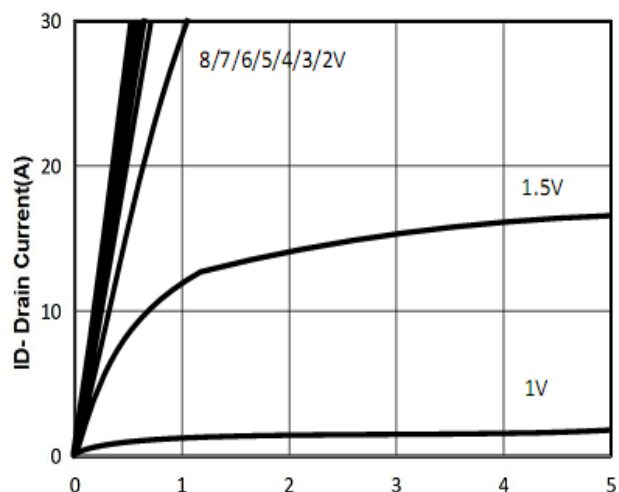


Figure4: V_{ds} Drain-Source Voltage (V)

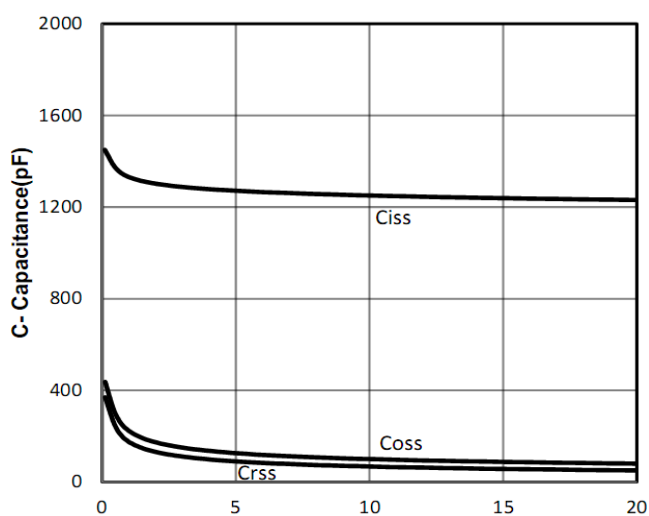


Figure5: V_{ds} Drain-Source Voltage (V)

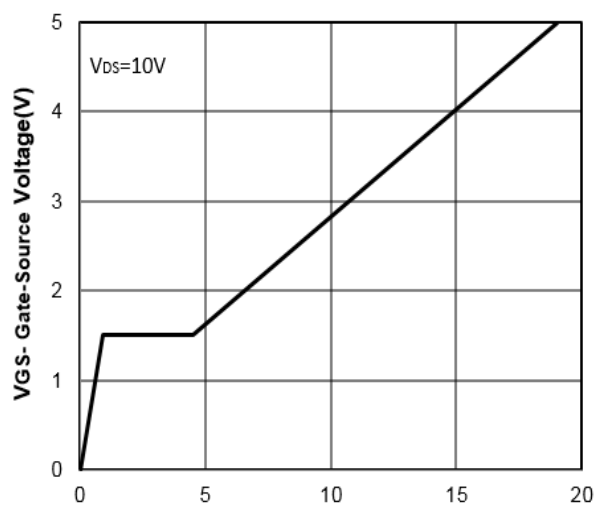


Figure6: Q_g Gate Charge (nC)

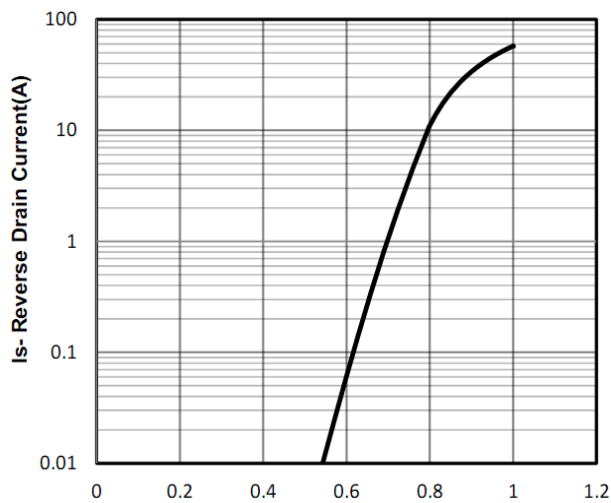


Figure7: Vsd Source-Drain Voltage (V)

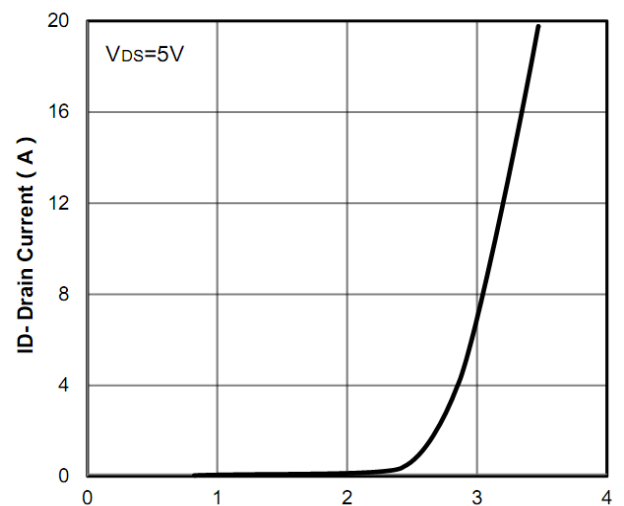


Figure8: Vgs Gate-Source Voltage (V)

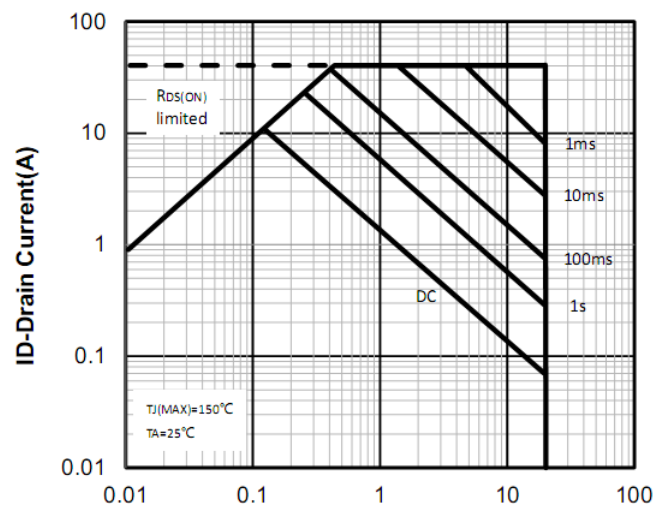


Figure9: VDS Drain -Source Voltage (V)

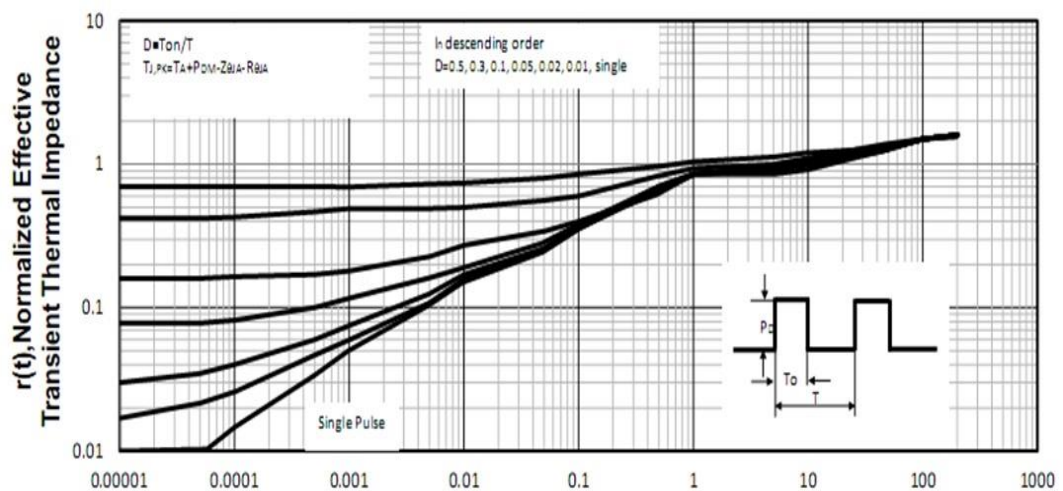


Figure10: Square Wave Pulse Duration (sec)

Test Circuit and Waveform:

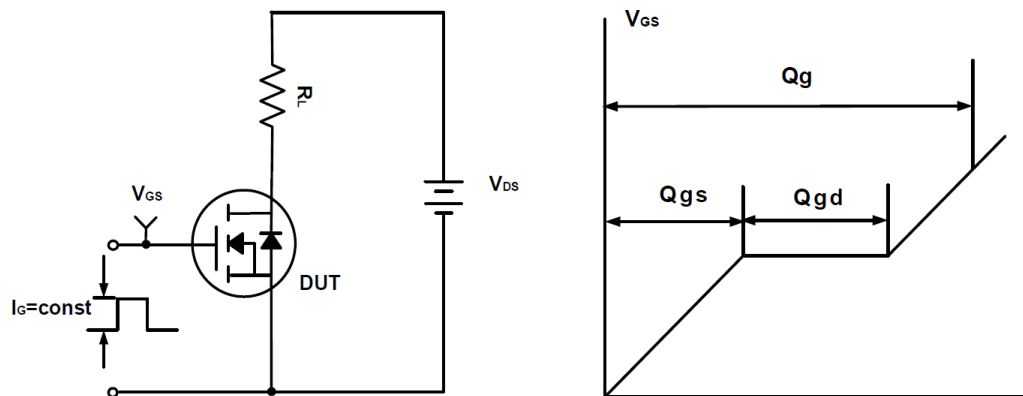


Figure A Gate Charge Test Circuit & Waveforms

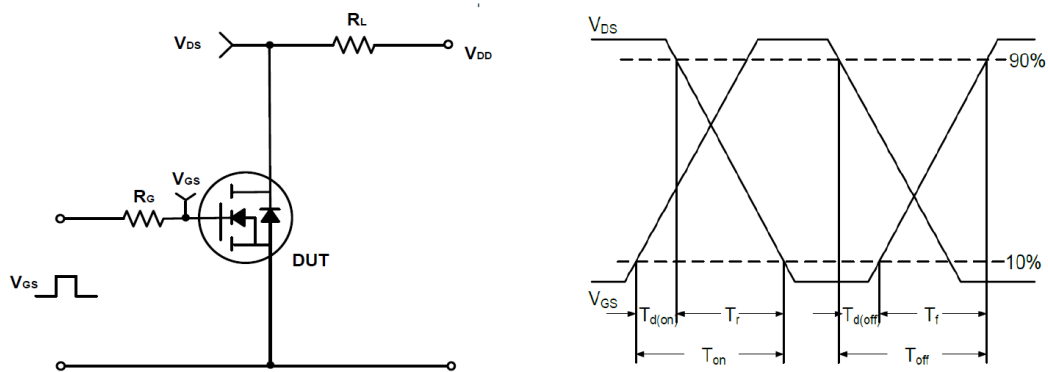
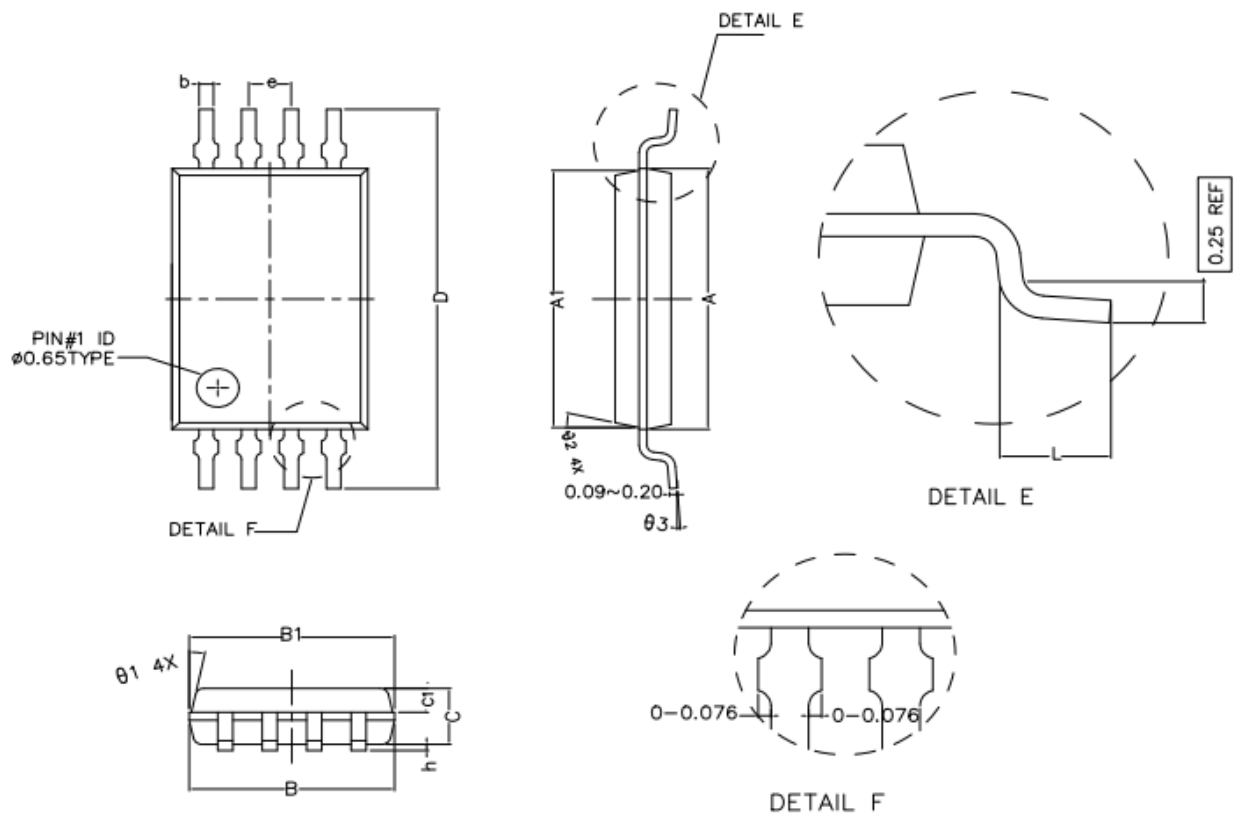


Figure B Switching Test Circuit & Waveforms

TSSOP-8 Package Outline Dimensions (Units: mm)



COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A	4.300	4.400	4.500
A1	4.240	4.340	4.440
B	2.900	3.000	3.100
B1	2.840	2.940	3.040
C	0.850	0.900	0.950
C1	0.337	0.387	0.437
D	6.250	6.400	6.550
L	0.450	0.600	0.750
b	0.170	0.220	0.300
h	0.050	0.100	0.150
e	0.650TYPE		
θ_1	12° TYPE		
θ_2	12° TYPE		
θ_3	0° ~ 7°		