



60V/12A Dual N-Channel Advanced Power MOSFET

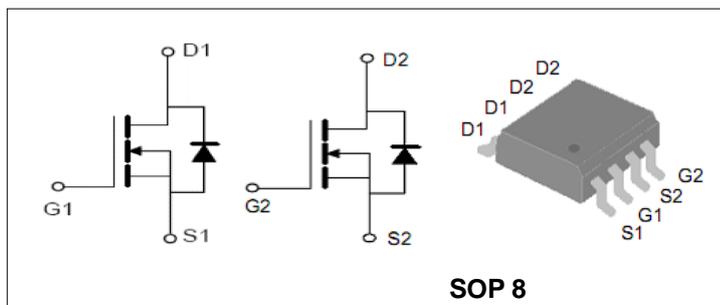
Features

- Low On-Resistance
- Fast Switching

BVDSS	60	V
ID	12	A
RDSON@VGS=10V	15	mΩ
RDSON@VGS=4.5V	17	mΩ

Applications

- Power switching application
- Hard switched and high frequency circuits
- uninterruptible power supply



Order Information

Product	Package	Marking	Reel Size	Reel	Carton
PTS6012D	SOP-8	PTS6012D	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	60	V
V_{GS}	Gate-Source Voltage	±20	V
T_J	Maximum Junction Temperature	150	°C
T_{STG}	Storage Temperature Range	-55 to 150	°C
I_S	Diode Continuous Forward Current	$T_A = 25^\circ\text{C}$ 12	A
Mounted on Large Heat Sink			
I_{DM}	Pulse Drain Current Tested (Silicon Limit) (Note1)	$T_A = 25^\circ\text{C}$ 50	A
I_D	Continuous Drain current	$T_A = 25^\circ\text{C}$ 12	A
P_D	Maximum Power Dissipation	$T_A = 25^\circ\text{C}$ 1.5	W
$R_{\theta JC}$	Thermal Resistance Junction-to- Ambient (Note2)	83.3	°C/W



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Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
V _{(BR)DSS}	Drain- Source Breakdown Voltage	VGS=0V ID=250μA	60	--	--	V
I _{DSS}	Zero Gate Voltage Drain current	VDS=60V,VGS=0V	--	--	1	μA
I _{GSS}	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
V _{GS(TH)}	Gate Threshold Voltage	VDS=VGS,ID=250μA	1	1.6	2.5	V
R _{DS(ON)}	Drain-Source On-State Resistance (Note3)	VGS=10V, ID=10A	--	15	20	mΩ
		VGS=4.5V, ID=5A	--	17	24	
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated) (Note4)						
C _{iss}	Input Capacitance	VDS=30V, VGS=0V, F=1MHz	--	2800	--	pF
C _{oss}	Output Capacitance		--	116	--	pF
C _{rss}	Reverse Transfer Capacitance		--	107	--	pF
Q _g	Total Gate Charge	VDS=30V, ID=10A, VGS=10V	--	50	--	nC
Q _{gs}	Gate-Source Charge		--	6	--	nC
Q _{gd}	Gate-Drain Charge		--	15	--	nC
Switching Characteristics (Note4)						
t _{d(on)}	Turn-on Delay Time	VDD=30V, ID=10A , RG=3Ω, VGS=10V	--	7.4	--	nS
t _r	Turn-on Rise Time		--	5.1	--	nS
t _{d(off)}	Turn-off Delay Time		--	28.2	--	nS
t _f	Turn-off Fall Time		--	5.5	--	nS
Source- Drain Diode Characteristics @ T_J = 25°C (unless otherwise stated)						
V _{SD}	Forward on voltage	ISD=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. Guaranteed by design, not subject to production testing.



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Typical Characteristics

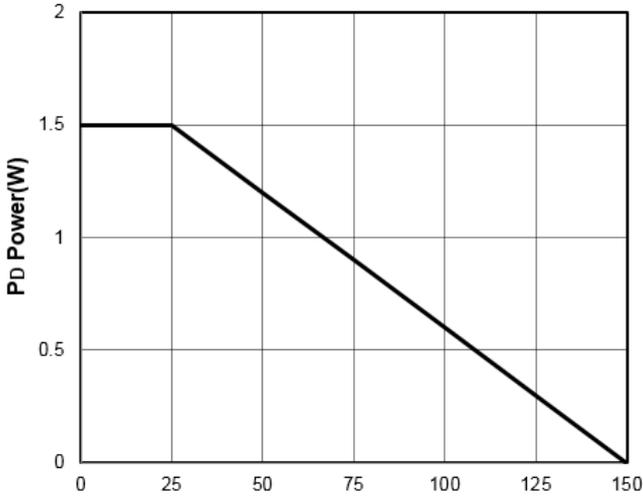


Figure1: T_J Junction Temperature (°C)

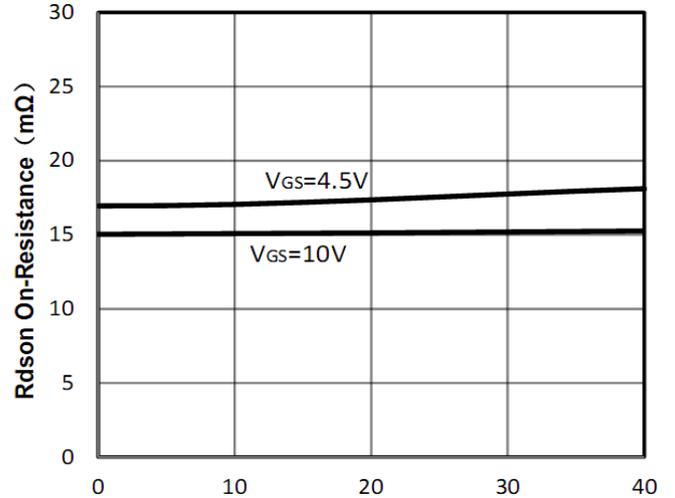


Figure2: I_D Drain Current (A)

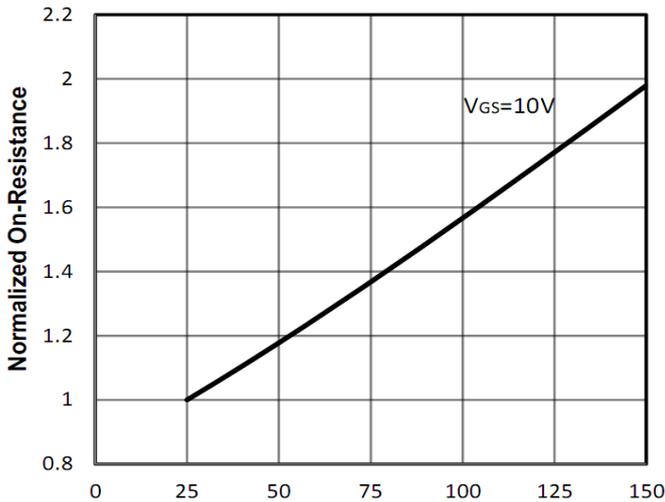


Figure3: T_J Junction Temperature (°C)

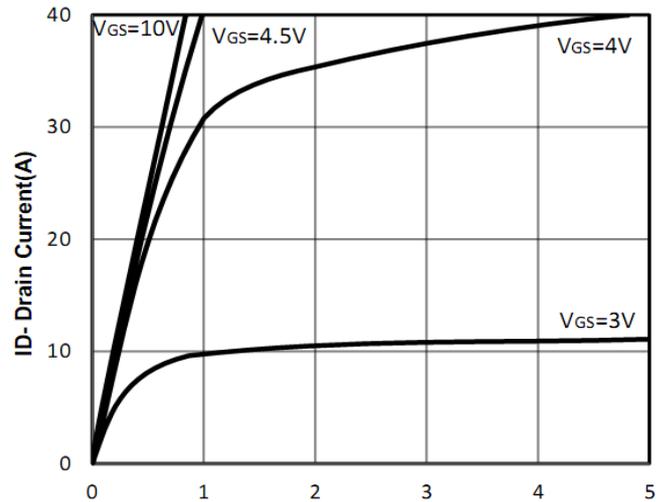


Figure4: V_{ds} Drain-Source Voltage (V)

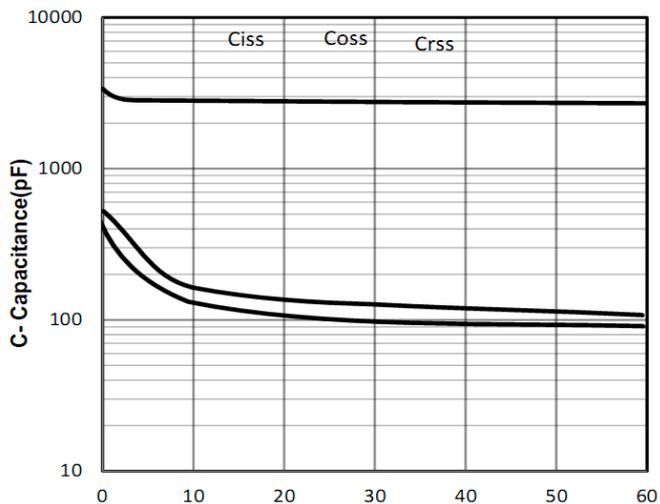


Figure5: V_{ds} Drain-Source Voltage (V)

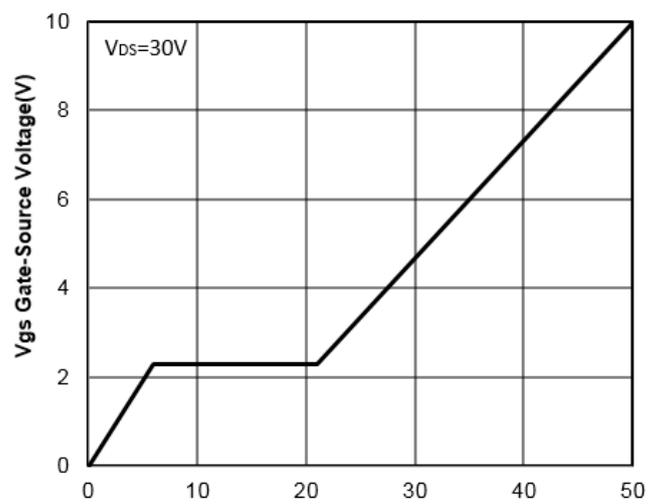


Figure6: Q_g Gate Charge (nC)



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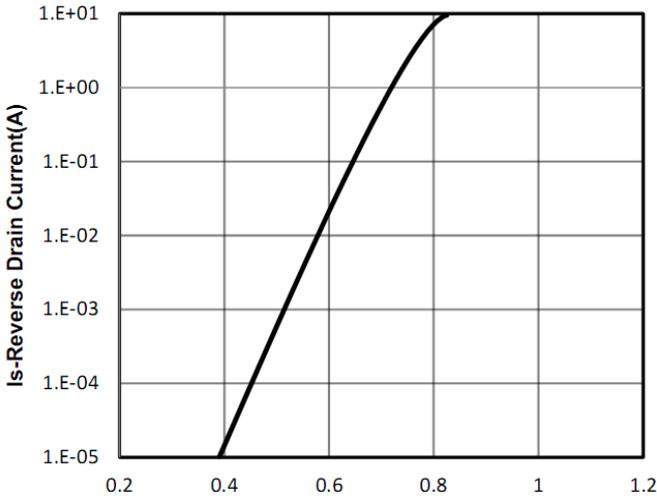


Figure7: Vsd Source-Drain Voltage (V)

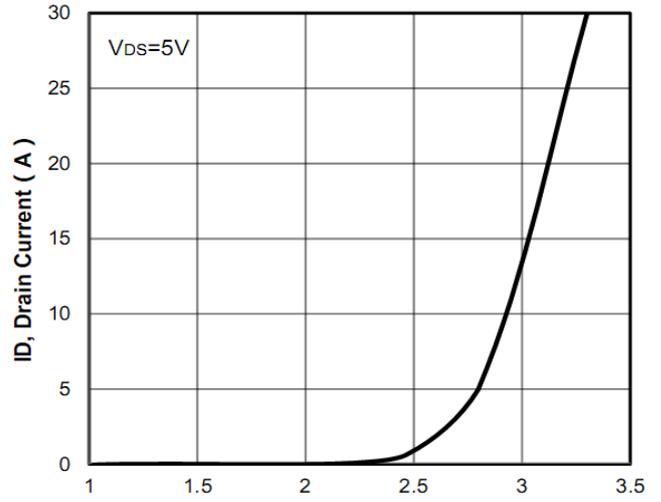


Figure8: Vgs Gate-Source Voltage (V)

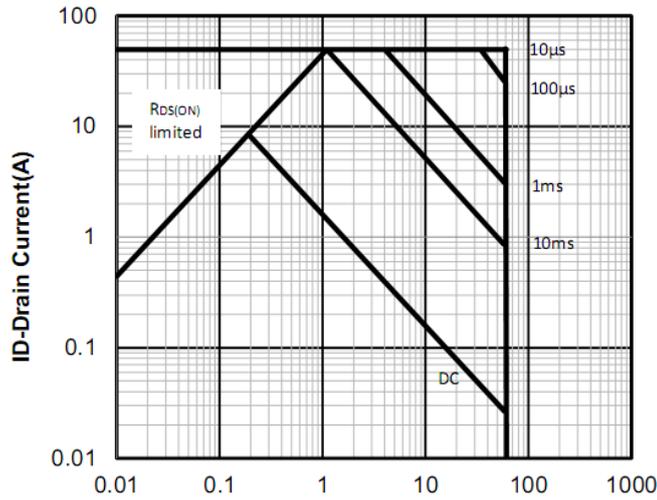


Figure9: VDS Drain -Source Voltage (V)

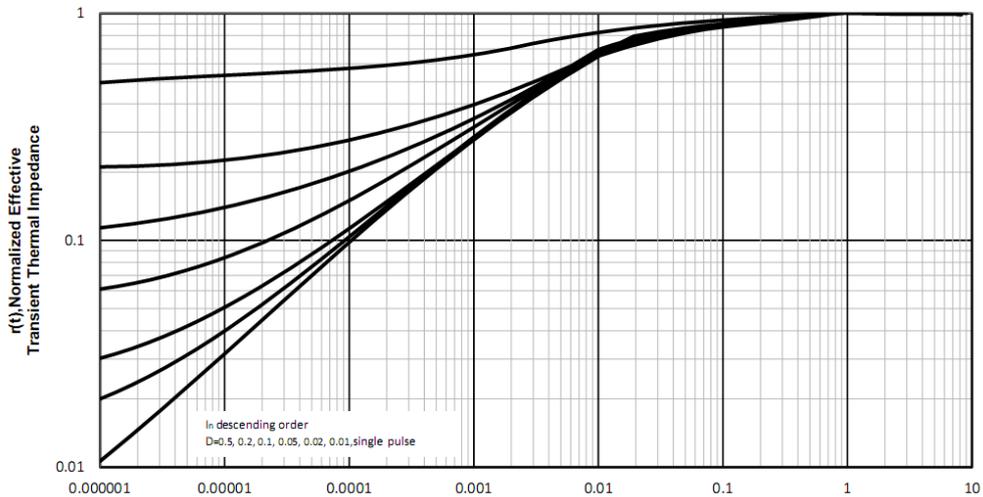


Figure10: Square Wave Pulse Duration (sec)



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Test Circuit and Waveform:

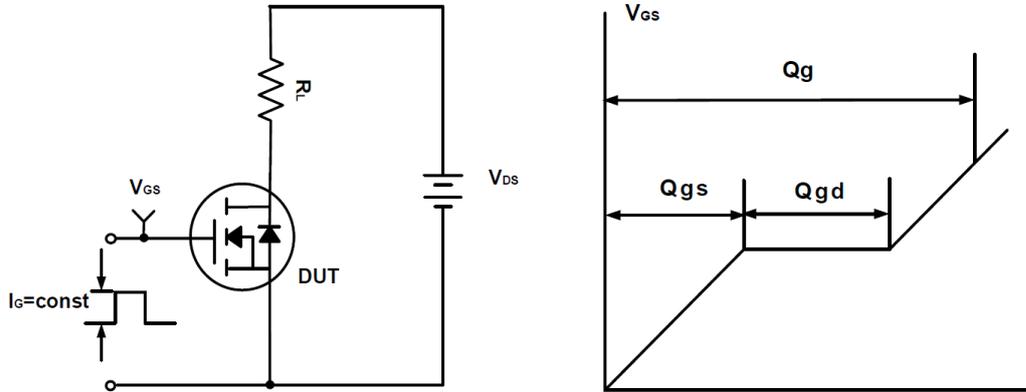


Figure A Gate Charge Test Circuit & Waveforms

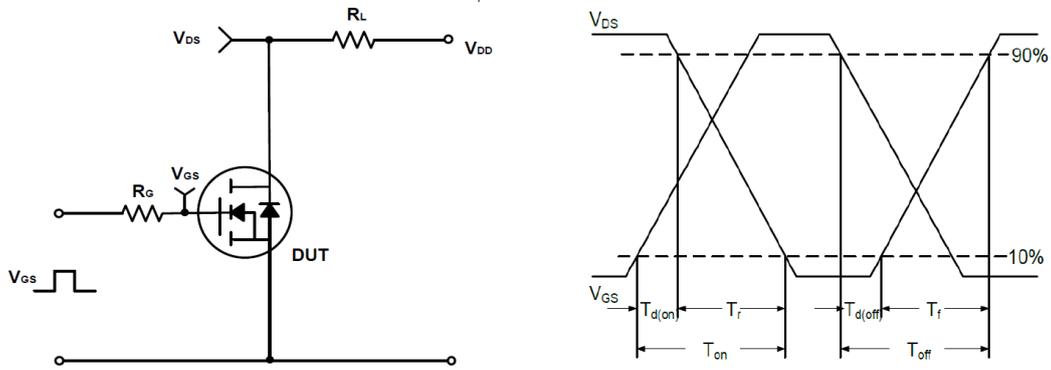
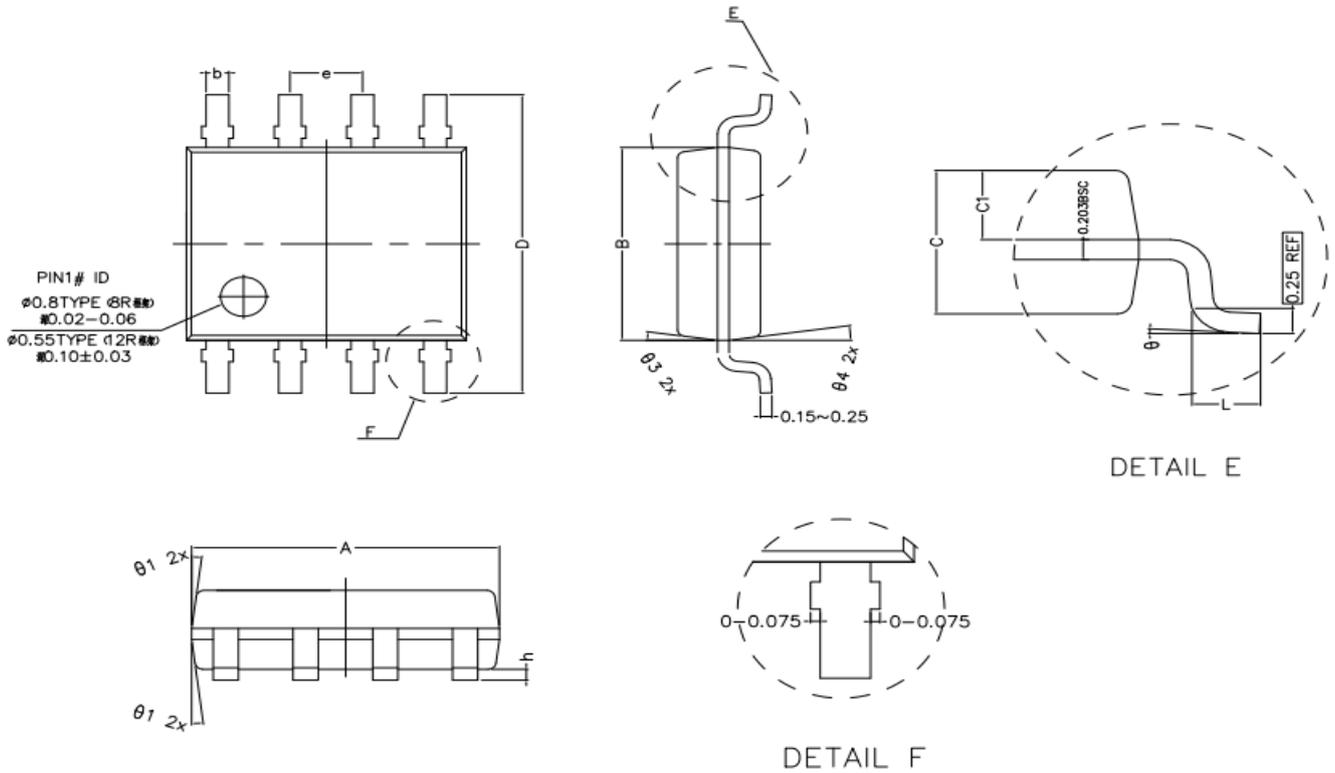


Figure B Switching Test Circuit & Waveforms



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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°		