

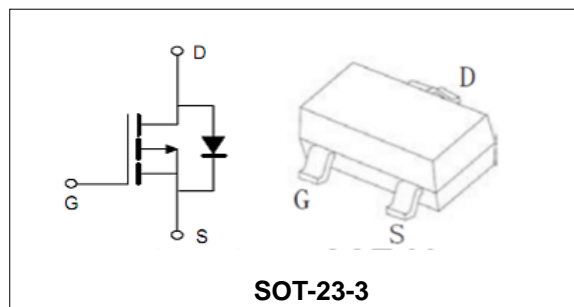
**-60V/-4A P-Channel Advanced Power MOSFET****Features**

- High density cell design for ultra low R_{dson}
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

BVDSS	-60	V
ID	-4	A
RDSON@VGS=10V	106	mΩ
RDSON@VGS=4.5V	135	mΩ

Applications

- Low Switch
- PWM Application

**Order Information**

Product	Package	Marking	Reel Size	Reel	Carton
PTL04P06	SOT-23-3	4P06	7inch	3000PCS	180000PCS

Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit	
Common Ratings (TC=25°C Unless Otherwise Noted)				
V _{(BR)DSS}	Drain-Source 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	TA =25°C	-4	A
Mounted on Large Heat Sink				
I _{DM}	Pulse Drain Current (Silicon Limit) (Note1)	TA =25°C	-12	A
I _D	Continuous Drain current	TA =25°C	-4	A
P _D	Maximum Power Dissipation	TA =25°C	1.5	W
R _{θJA}	Thermal Resistance, Junction to Ambient (Note2)		83.3	°C/W

**-60V/-4A P-Channel Advanced Power MOSFET**

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	-1.25	-1.6	-3	V
R _{DS(ON)}	Drain-Source On-State Resistance (Note3)	VGS= -10V, ID= -4A	--	88	110	mΩ
		VGS= -4.5V, ID= -3A	--	99	150	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated) (Note4)						
C _{iss}	Input Capacitance	VDS= -30V, VGS=0V, F=1MHz	--	930	--	pF
C _{oss}	Output Capacitance		--	85	--	pF
C _{rss}	Reverse Transfer Capacitance		--	35	--	pF
Q _g	Total Gate Charge	VDS= -30V, ID= -4A, VGS= -10V	--	25	--	nC
Q _{gs}	Gate-Source Charge		--	3	--	nC
Q _{gd}	Gate-Drain Charge		--	7	--	nC
Switching Characteristics (Note4)						
t _{d(on)}	Turn-on Delay Time	VDD= -30V, RL= 7.5Ω, RG=3Ω, VGS= -10V	--	8	--	nS
t _r	Turn-on Rise Time		--	4	--	nS
t _{d(off)}	Turn-off Delay Time		--	32	--	nS
t _f	Turn-off Fall Time		--	7	--	nS
Source- Drain Diode Characteristics @ T_J = 25°C (unless otherwise stated)						
V _{SD}	Forward on voltage (Note3)	IS=-4A,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.

Typical Characteristics



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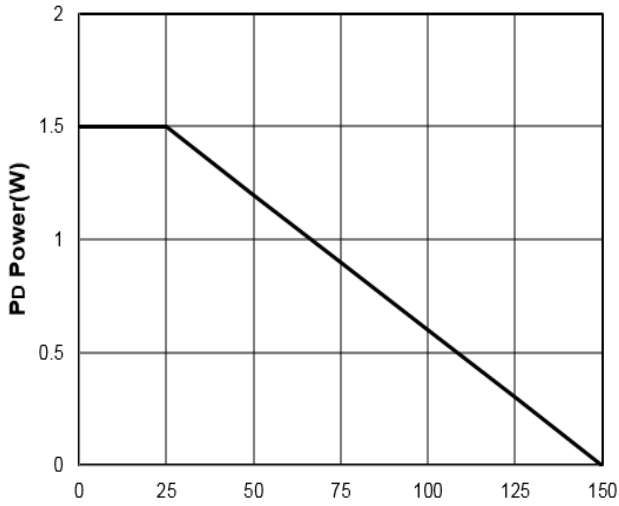


Figure1: T_j Junction Temperature (°C)

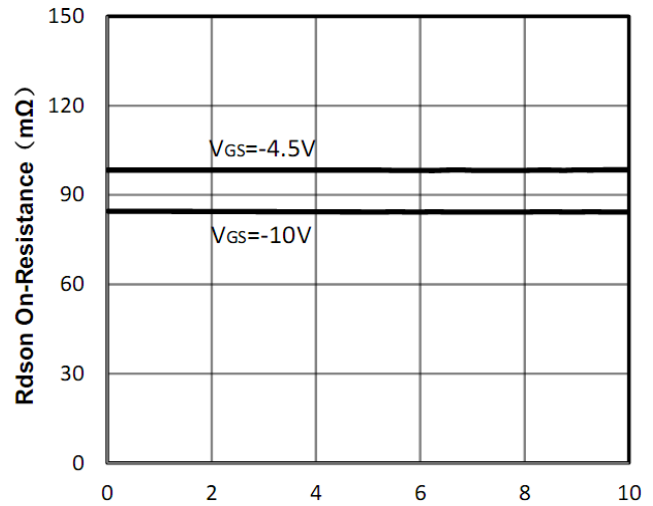


Figure2: -I_d Drain Current (A)

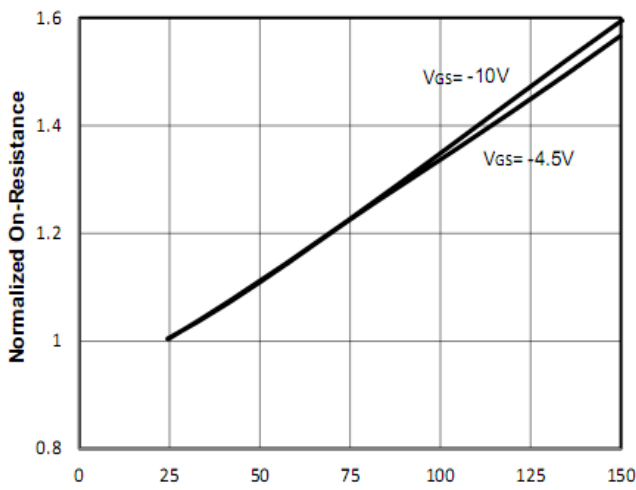


Figure3: T_j Junction Temperature (°C)

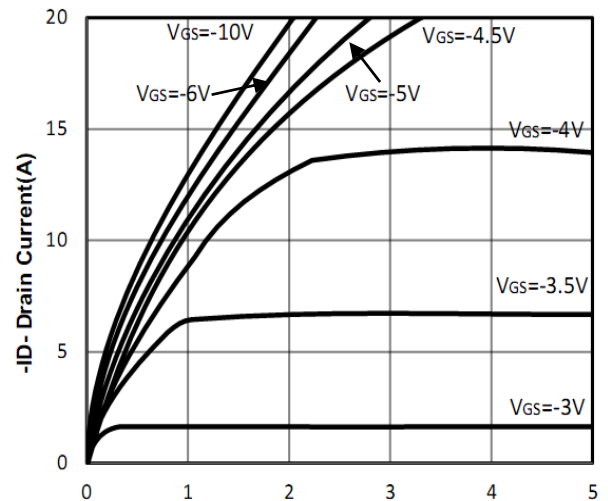


Figure4: -V_{ds} Drain-Source Voltage (V)

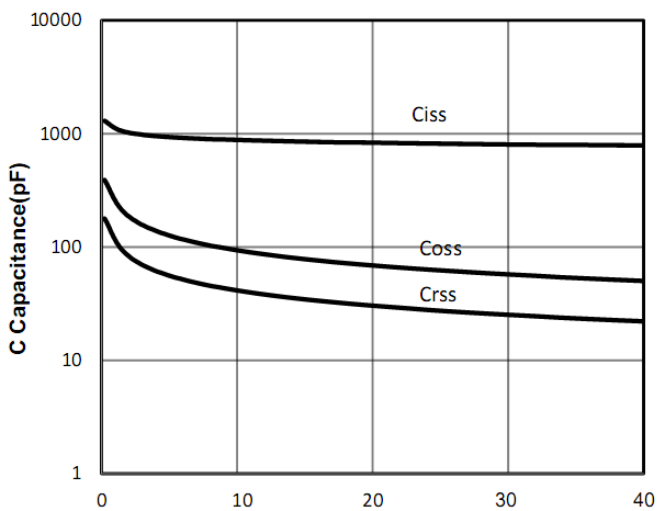


Figure5: -V_{ds} Drain-Source Voltage (V)

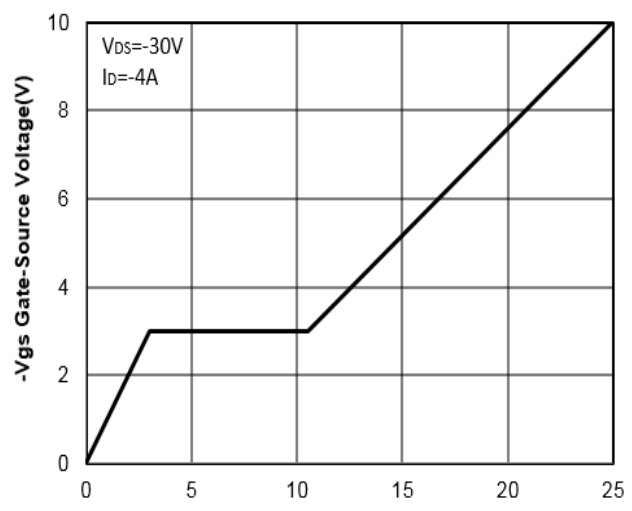


Figure6: Q_g Gate Charge (nC)



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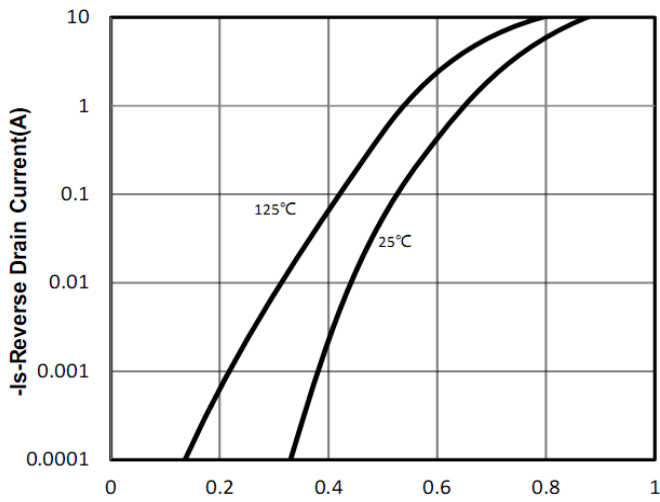


Figure7: Vsd Source-Drain Voltage (V)

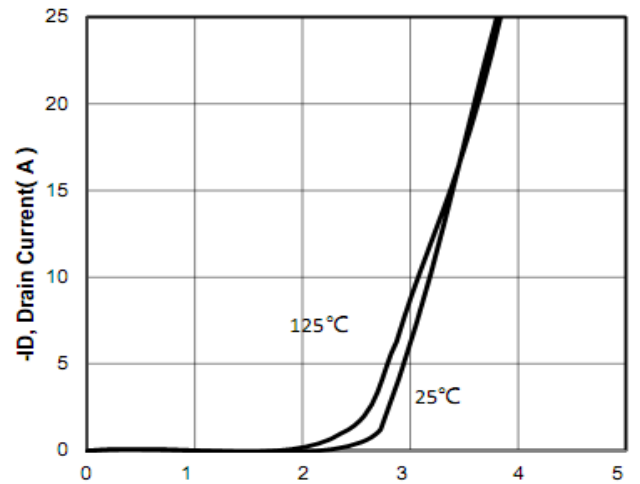


Figure8: -Vgs Gate-Source Voltage (V)

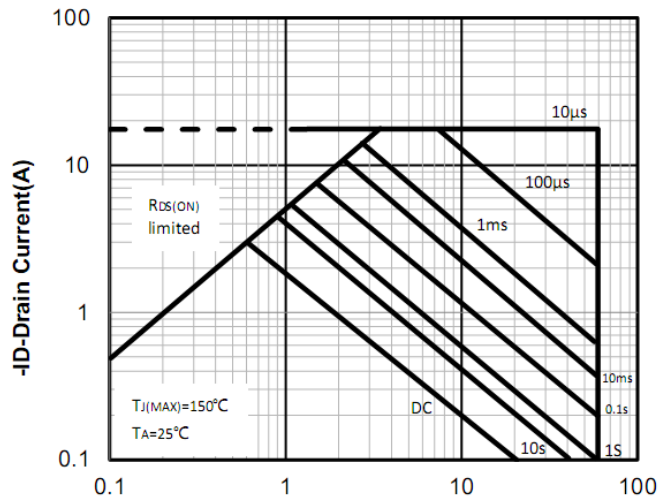


Figure9: Vds Drain -Source Voltage (V)

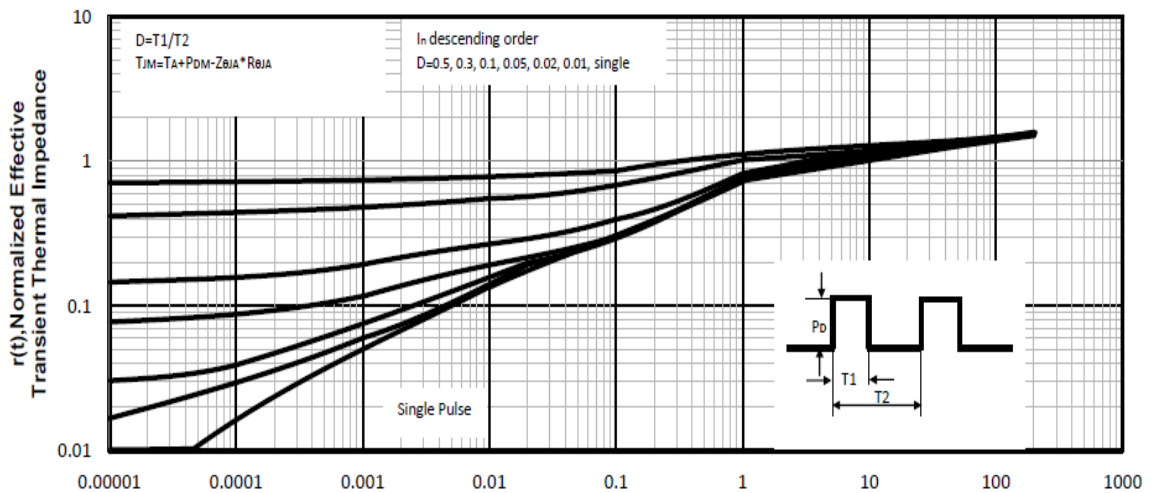


Figure10: Square Wave Pulse Duration (sec)

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Test Circuit and Waveform:

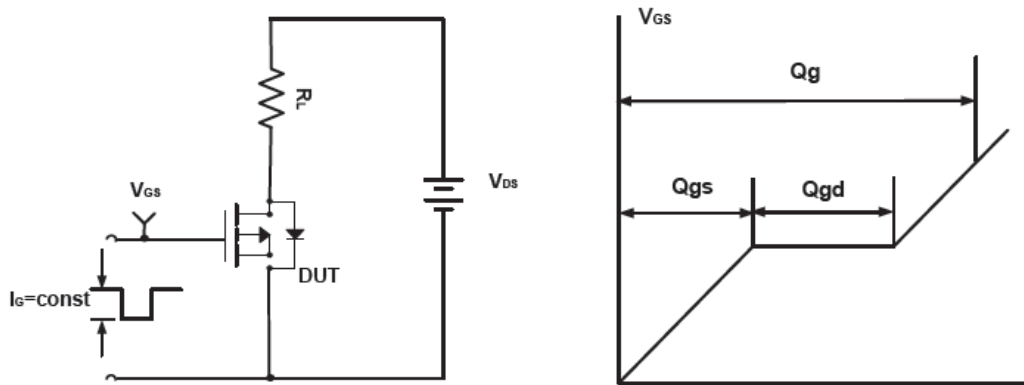


Figure A Gate Charge Test Circuit & Waveforms

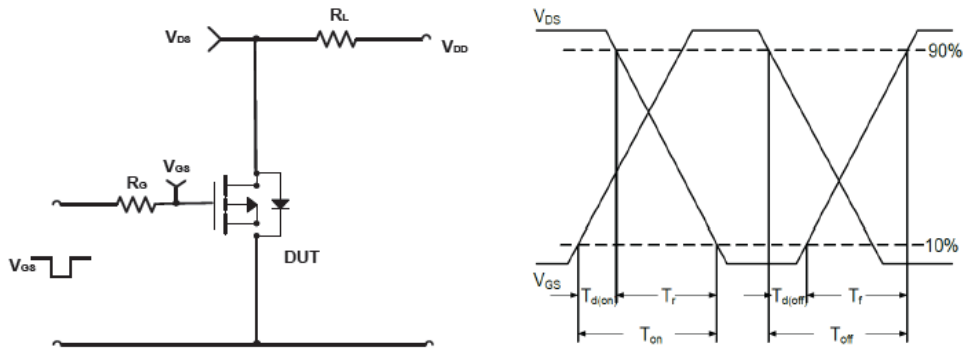


Figure B Switching Test Circuit & Waveforms

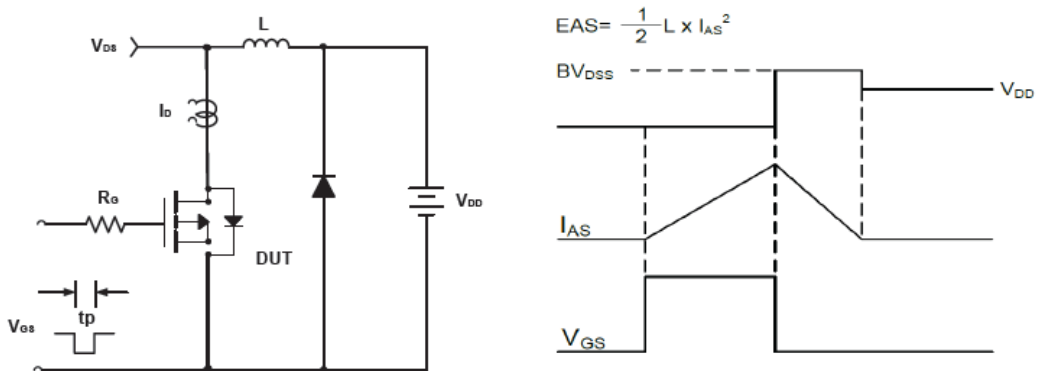
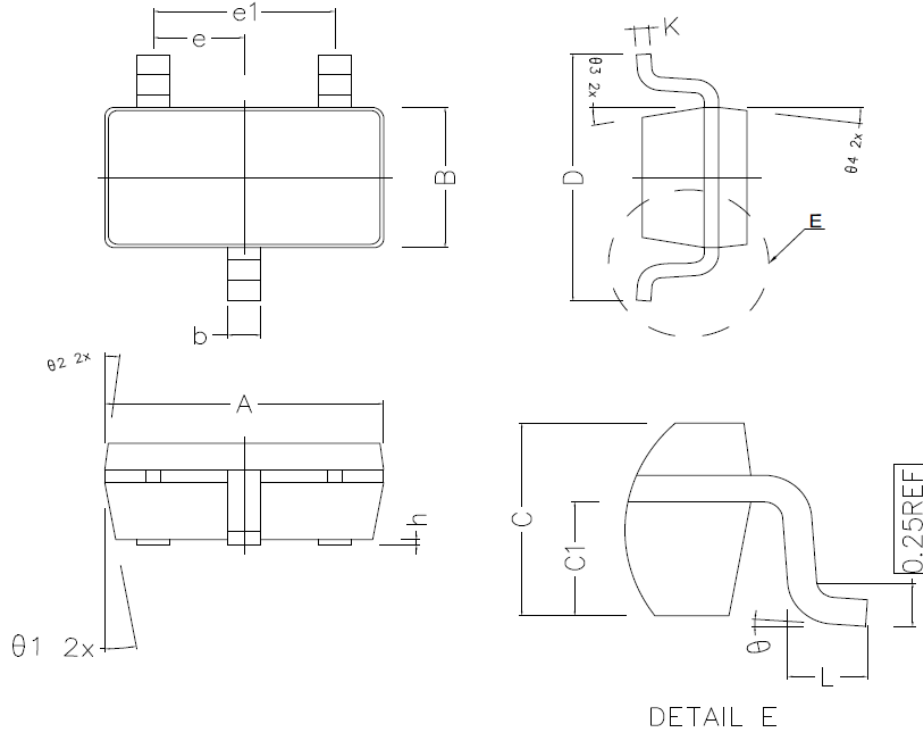


Figure C Unclamped Inductive Switching Circuit & Waveforms

-60V/-4A P-Channel Advanced Power MOSFET
SOT-23-3 Package Outline Dimensions (Units: mm)


COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A	2.820	2.920	3.020
B	1.500	1.600	1.700
C	1.050	1.100	1.150
C1	0.600	0.650	0.700
D	2.650	2.800	2.950
L	0.300	0.450	0.600
b	0.280	0.350	0.420
h	0.020	0.050	0.100
K	0.120	—	0.230
e	0.950TYPE		
e1	1.900TYPE		
theta1	10° TYPE		
theta2	7° TYPE		
theta3	10° TYPE		
theta4	7° TYPE		
theta	0° ~ 8°		