

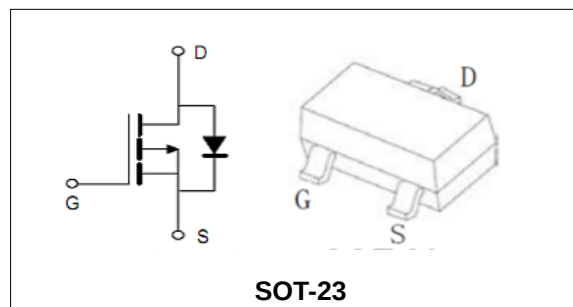
**-60V/-2A P-Channel Advanced Power MOSFET****Features**

- Lead free product is acquired
- Surface mount package

Applications

- Low Switch
- DC/DC converters

BVDSS	-60	V
ID	-2	A
RDSON@VGS=10V	168	mΩ
RDSON@VGS=4.5V	195	mΩ

**Order Information**

Product	Package	Marking	Reel Size	Reel	Carton
PT60P02	SOT-23	60P02	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	-2	A
Mounted on Large Heat Sink				
I _{DM}	Pulse Drain Current (Sillicon Limit) (Note1)	TA =25°C	-8	A
I _D	Continuous Drain current	TA =25°C	-2	A
P _D	Maximum Power Dissipation	TA =25°C	1.4	W
R _{θJA}	Thermal Resistance, Junction to Ambient (Note2)		104	°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	-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= -2A	--	168	208	mΩ
		VGS= -4.5V, ID= -1A	--	195	240	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated) (Note4)						
C _{iss}	Input Capacitance	VDS= -30V, VGS=0V, F=1MHz	--	540	--	pF
C _{oss}	Output Capacitance		--	25	--	pF
C _{rss}	Reverse Transfer Capacitance		--	20	--	pF
Q _g	Total Gate Charge	VDS= -30V, ID= -1A, VGS= -10V	--	10.5	--	nC
Q _{gs}	Gate-Source Charge		--	2.5	--	nC
Q _{gd}	Gate-Drain Charge		--	1.3	--	nC
Switching Characteristics (Note4)						
t _{d(on)}	Turn-on Delay Time	VDD= -30V, ID= 1A, RG=3Ω,	--	38	--	nS
t _r	Turn-on Rise Time		--	32	--	nS
t _{d(off)}	Turn-off Delay Time		--	12	--	nS
t _f	Turn-off Fall Time		--	10	--	nS
Source- Drain Diode Characteristics@ TJ = 25°C (unless otherwise stated)						
V _{SD}	Forward on voltage (Note3)	IS=-1A,VGS=0V	--	--	1.2	V

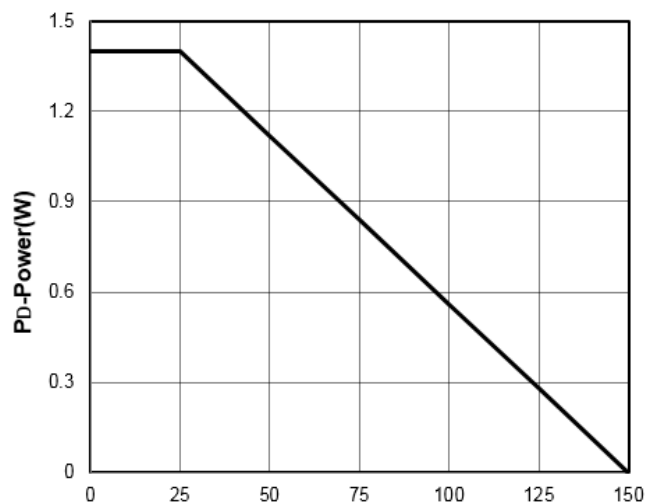
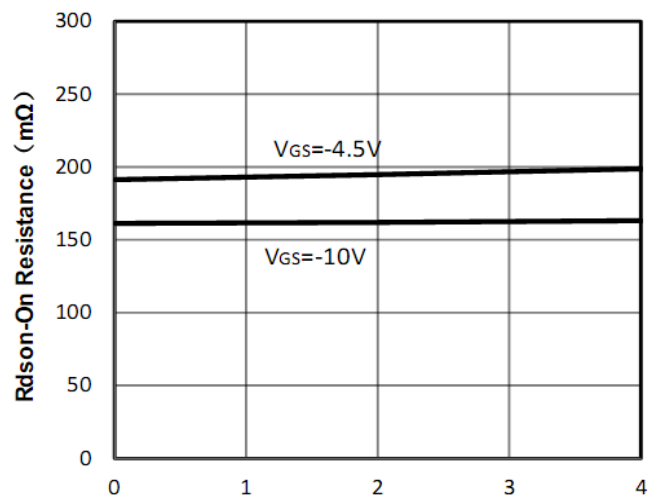
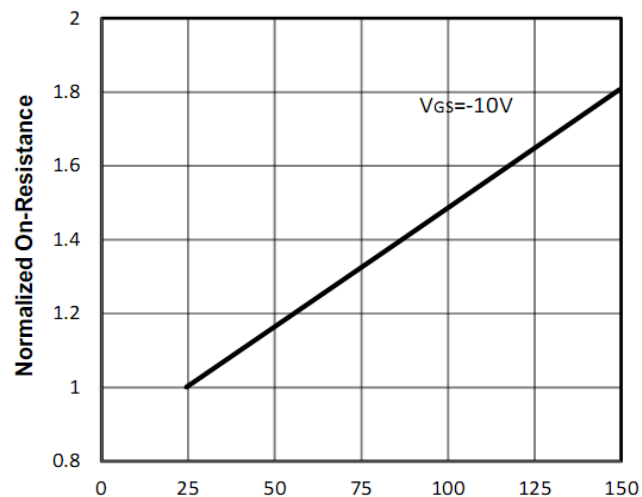
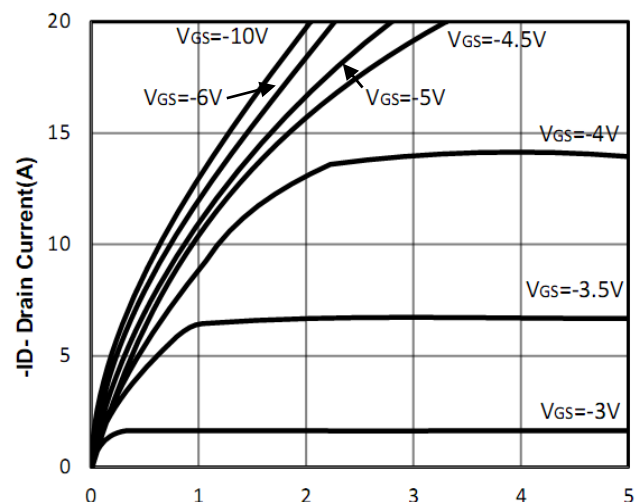
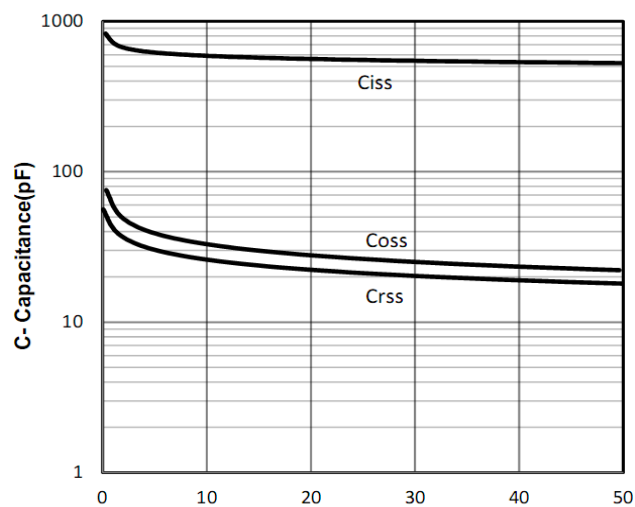
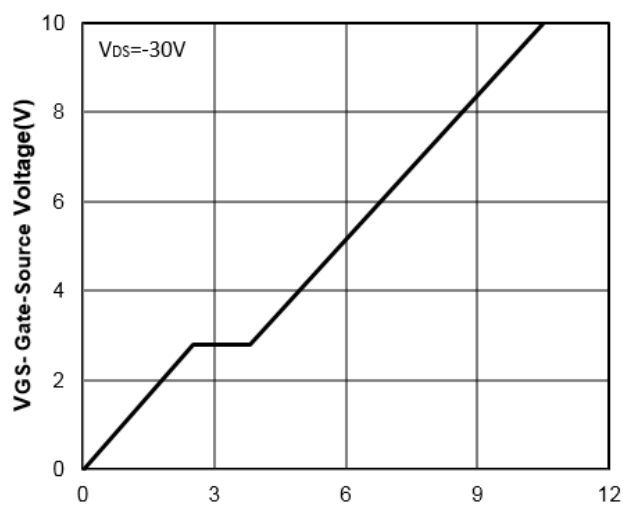
Note:

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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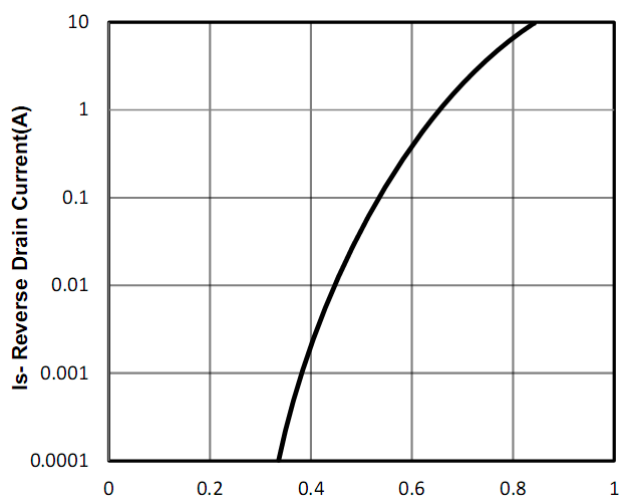


Figure7: -Vsd-Source Drain Voltage (V)

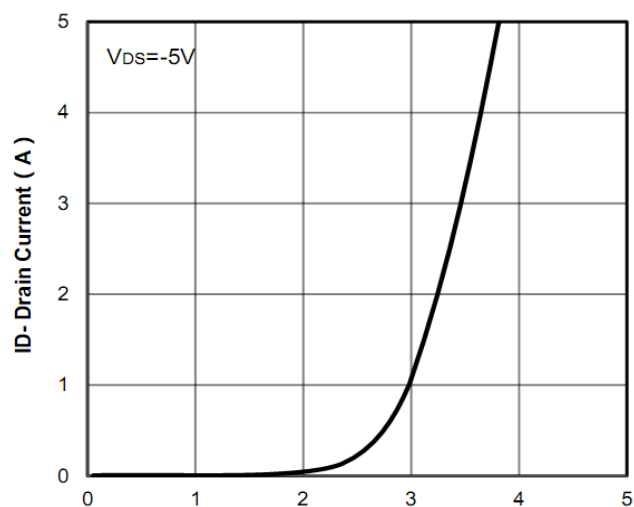


Figure8: -Vgs Gate Source Voltage (V)

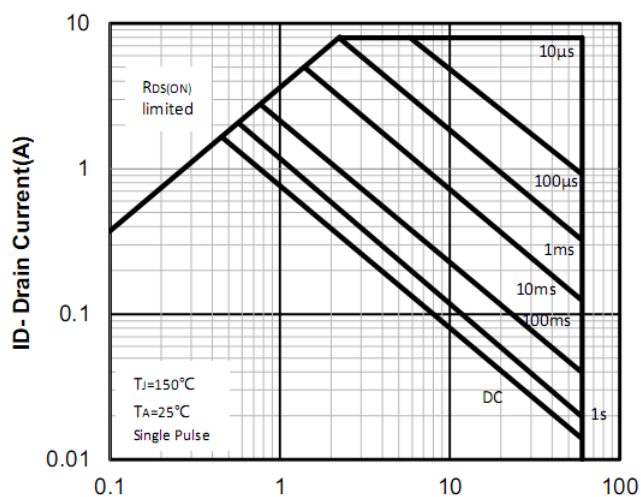


Figure9: Vds Drain Source Voltage (V)

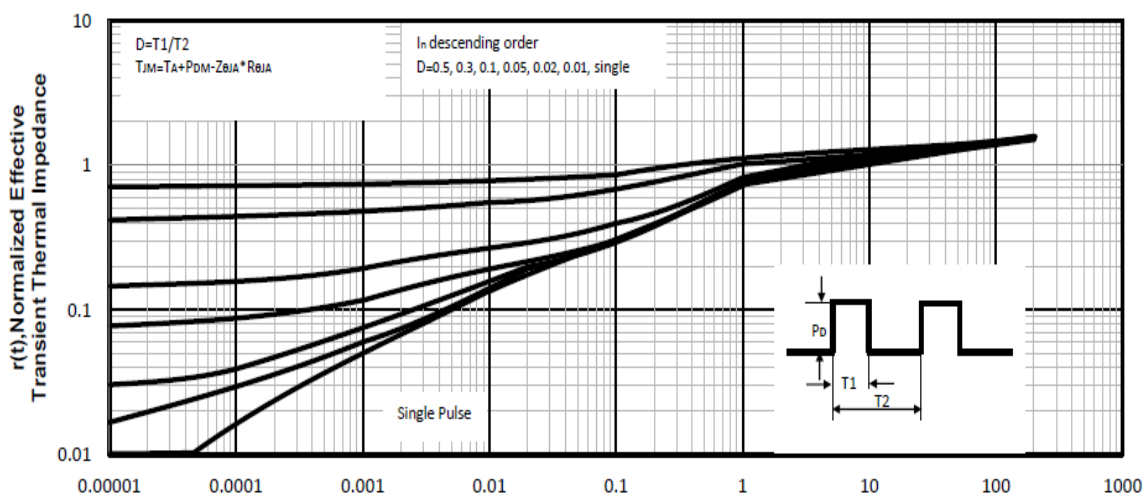
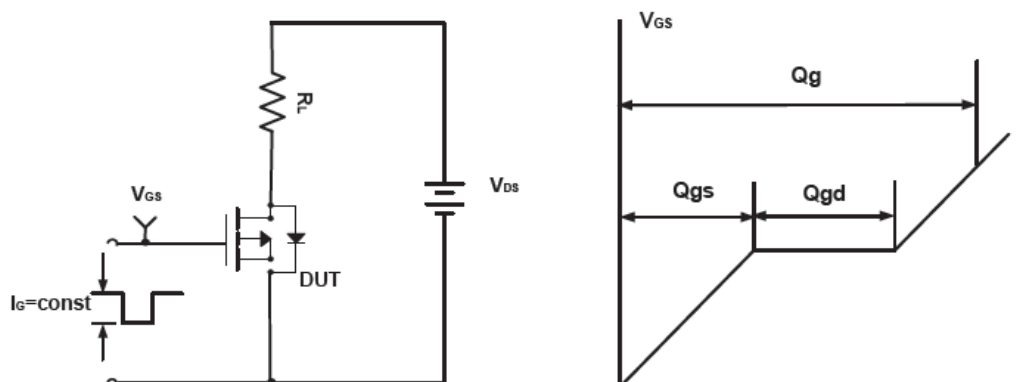
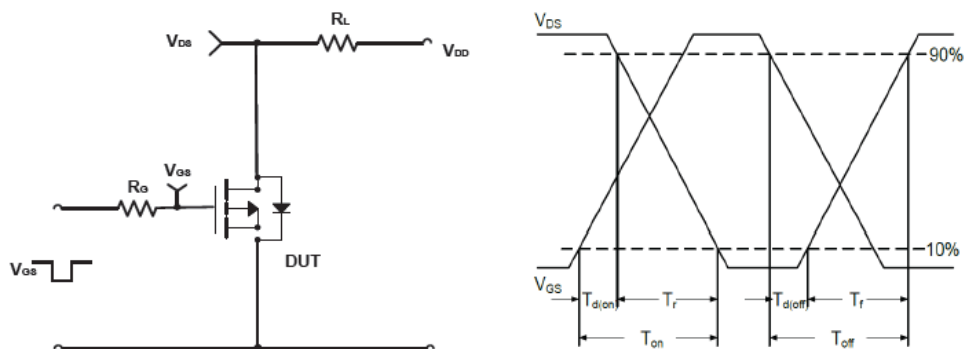
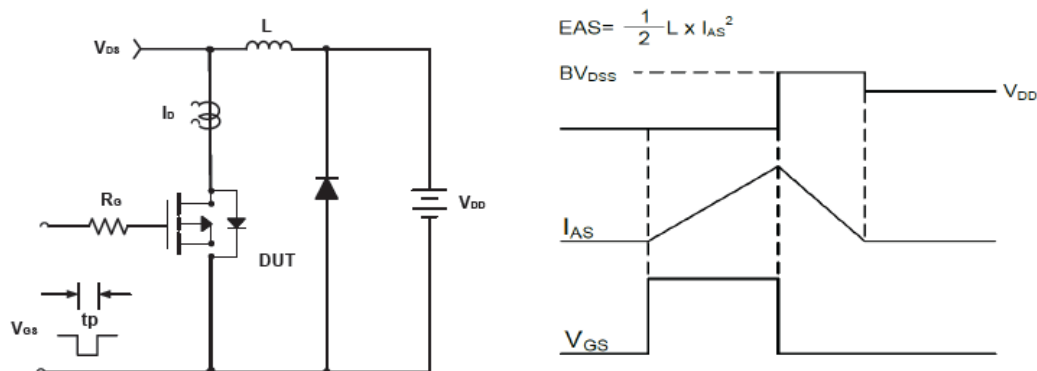
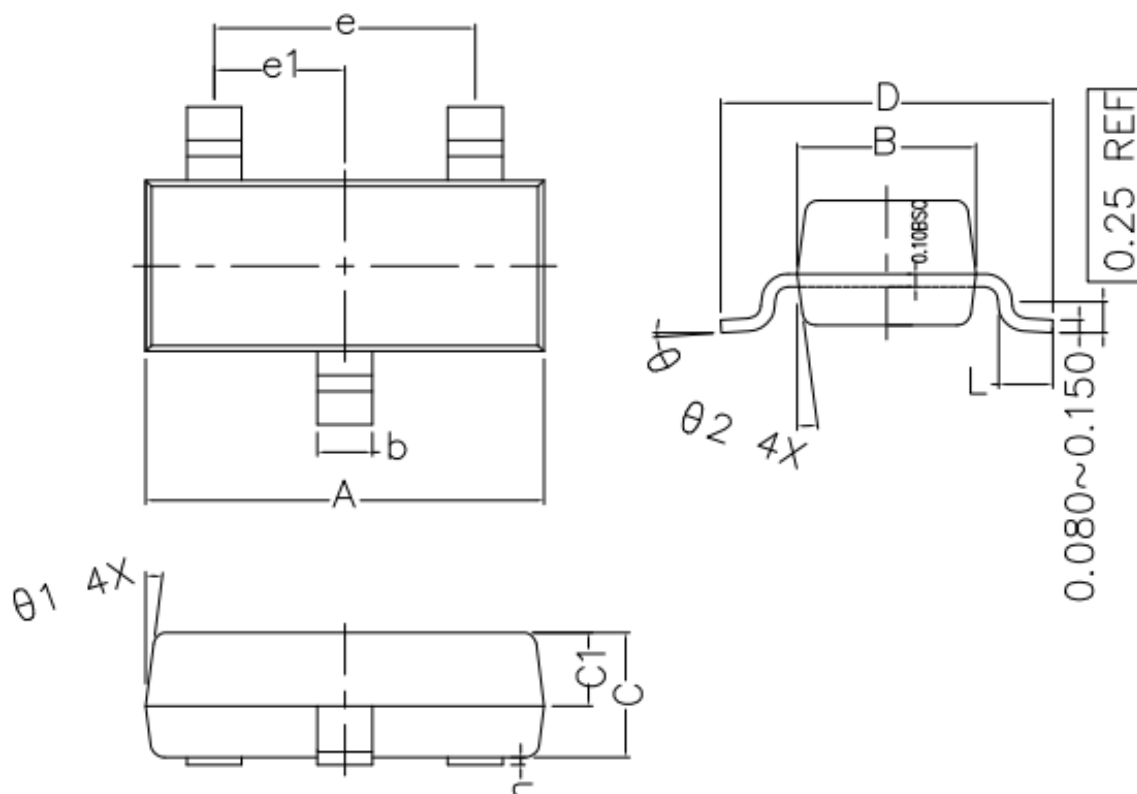


Figure10: Square Wave Pulse Duration (sec)

**Test Circuit and Waveform:****Figure A Gate Charge Test Circuit & Waveforms****Figure B Switching Test Circuit & Waveforms****Figure C Unclamped Inductive Switching Circuit & Waveforms**

**SOT-23 Package Outline Dimensions (Units: mm)**

COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A	2.800	2.900	3.000
B	1.200	1.300	1.400
C	0.900	1.000	1.100
C1	0.500	0.550	0.600
D	2.250	2.400	2.550
L	0.300	0.400	0.500
h	0.010	0.050	0.100
b	0.300	0.400	0.500
e	1.90 TYPE		
e1	0.95 TYPE		
θ_1	7° TYPE		
θ_2	7° TYPE		
θ	0° ~ 7°		