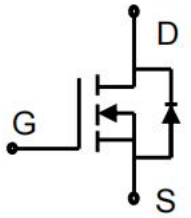
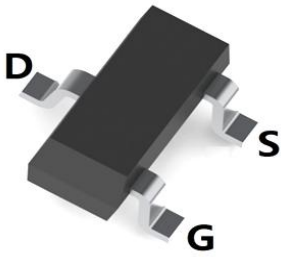
N-Channel Enhancement Mode Power MOSFET 30V/5.8A

Parameter	Value	Unit
V_{DS}	30	V
I_D	5.8	A
$R_{DS(on)}$	22	mΩ





SOT-23

Features

- Advanced trench process technology
- High Density Cell Design For Ultra Low On-Resistance

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

Absolute Maximum Ratings(Tc=25℃,unless otherwise noted)

Symbol	Parameter		Rating	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)				
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		30	V
V_{GS}	Gate-Source Voltage		±12	V
T_J	Maximum Junction Temperature		150	℃
T_{STG}	Storage Temperature Range		-55 to 150	℃
I_S	Diode Continuous Forward Current	TA=25°C	5.8	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested (Sillicon Limit) (Note1)	TA=25°C	30	A
I_D	Continuous Drain current	TA=25°C	5.8	A
P_D	Maximum Power Dissipation	TA=25°C	1.4	W
$R_{\theta JA}$	Thermal Resistance Junction−to−Ambient (Note2)		89.2	℃/W

Characteristics(TJ=25℃,unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ TJ = 25℃ (unless otherwise stated)						
$V_{(BR)DSS}$	Drain- Source Breakdown Voltage	VGS=0V,ID=250μA	30	--	--	V
I_{DSS}	Zero Gate Voltage Drain current	VDS=24V,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	0.7	--	1.4	V

$R_{DS(ON)}$	Drain-Source On-State Resistance(Note3)	VGS=10V, ID=5.8A	--	22	28	mΩ
		VGS=4.5V, ID=5A	--	25	33	mΩ
		VGS=2.5V, ID=4A	--	33	52	mΩ
Dynamic Electrical Characteristics @ TJ = 25℃ (unless otherwise stated) (Note4)						
C_{iss}	Input Capacitance	VDS=15V,VGS=0V, F=1MHz	--	340	--	pF
C_{oss}	Output Capacitance		--	115	--	pF
C_{rss}	Reverse Transfer Capacitance		--	33	--	pF
Qg	Total Gate Charge	VDS=15V, ID=5.8A, VGS= 4.5V	--	11	--	nC
Q_{gs}	Gate-Source Charge		--	1.6	--	nC
Q_{gd}	Gate-Drain Charge		--	2.8	--	nC
Switching Characteristics (Note4)						
$t_{d(on)}$	Turn-on Delay Time	VDD=15V,ID=1A, RG=3Ω, VGS=10V	--	7	--	nS
t_r	Turn-on Rise Time		--	15	--	nS
$t_{d(off)}$	Turn-off Delay Time		--	38	--	nS
t_f	Turn-off Fall Time		--	3	--	nS
Source- Drain Diode Characteristics@ TJ = 25℃ (unless otherwise stated)						
V_{SD}	Forward on voltage (Note3)	IS=3A,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

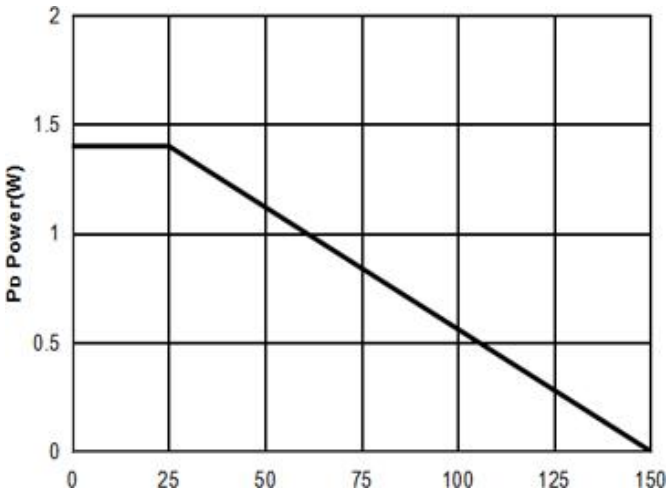


Figure1：TJ Junction Temperature（℃）

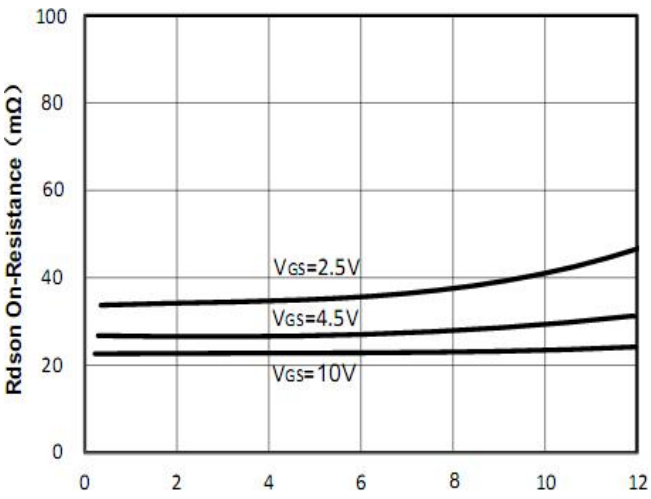


Figure2：-ID Drain Current（A）

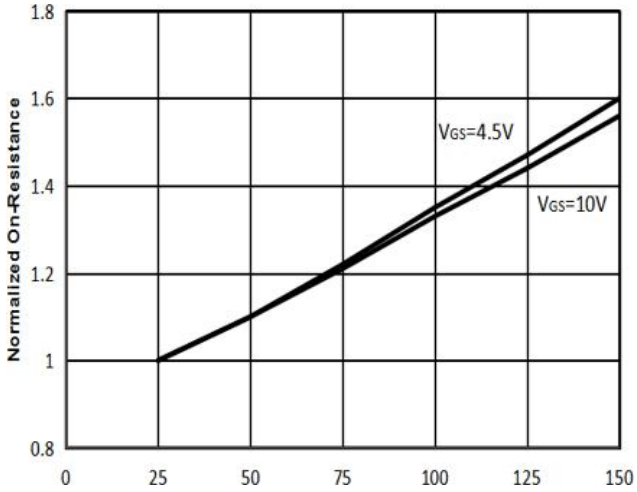


Figure3：TJ Junction Temperature（℃）

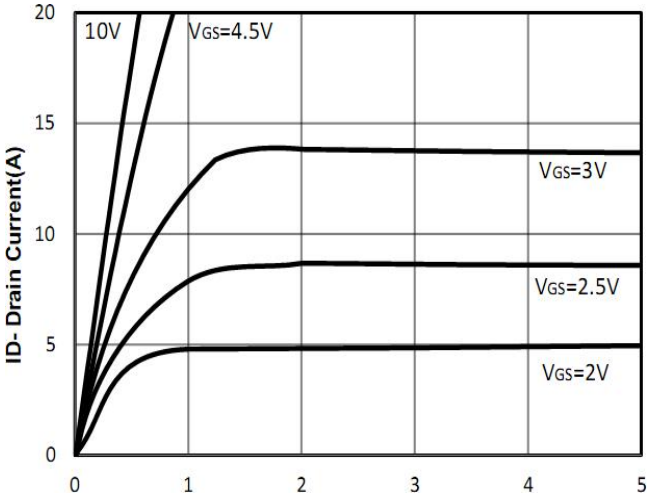


Figure4：-VDS Drain-Source Voltage（V）

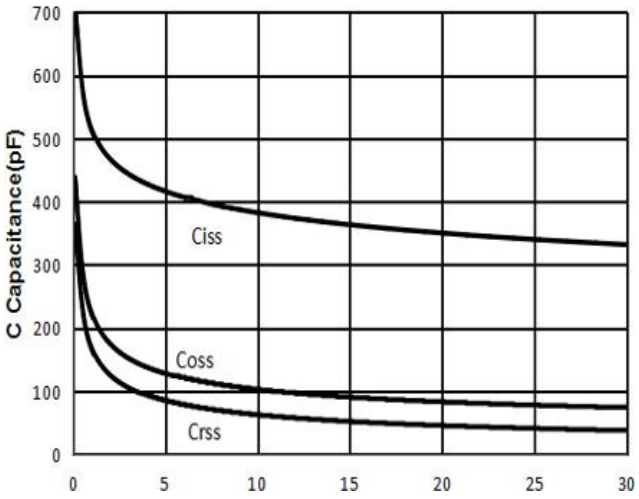


Figure5：-VDS Draun-Source Voltage（V）

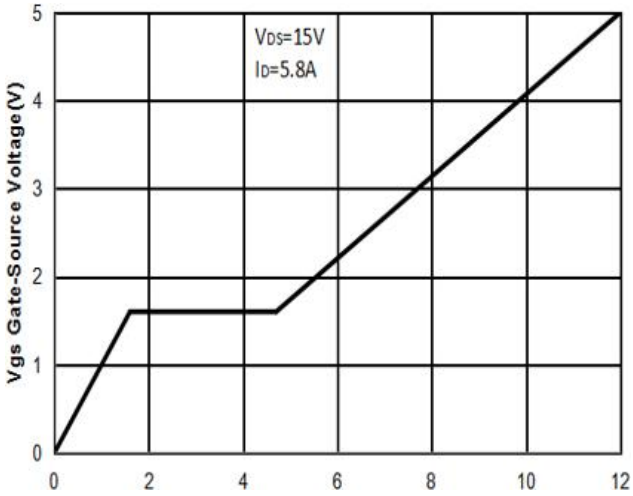


Figure6：Qg Gate Charge（nC）

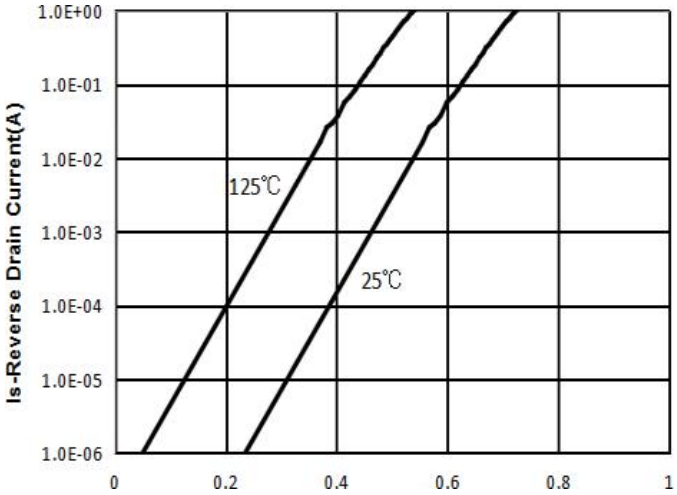


Figure7：-Vsd Source-Drain Voltage（V）

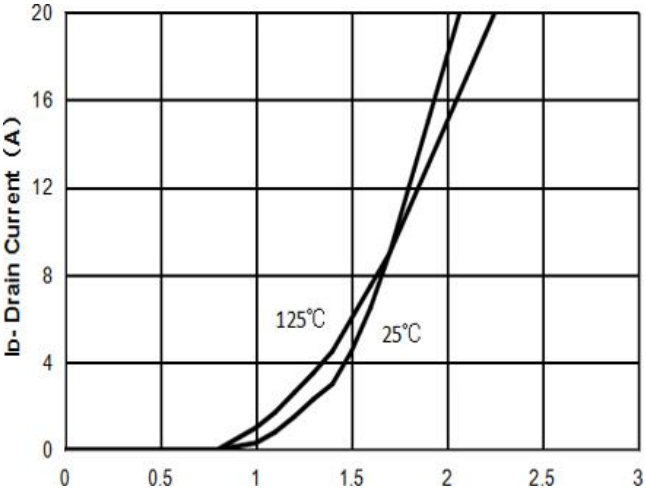


Figure8：-Vgs Gate-Source Voltage（V）

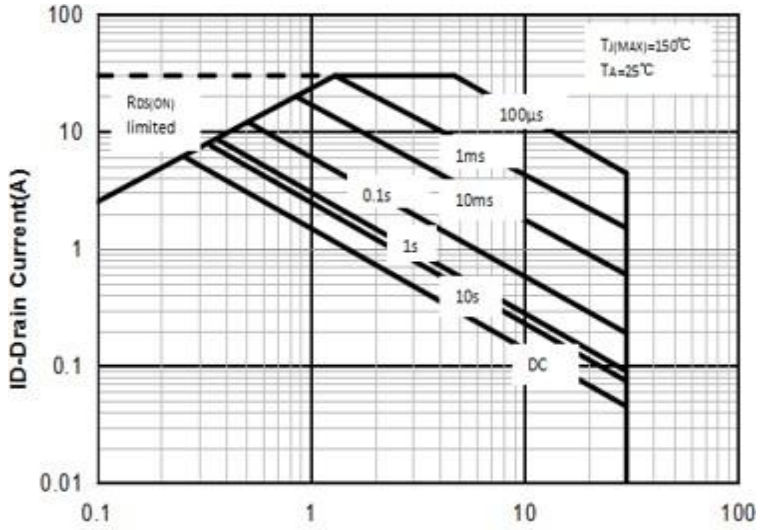


Figure9：-Vds Drain -Source Voltage（V）

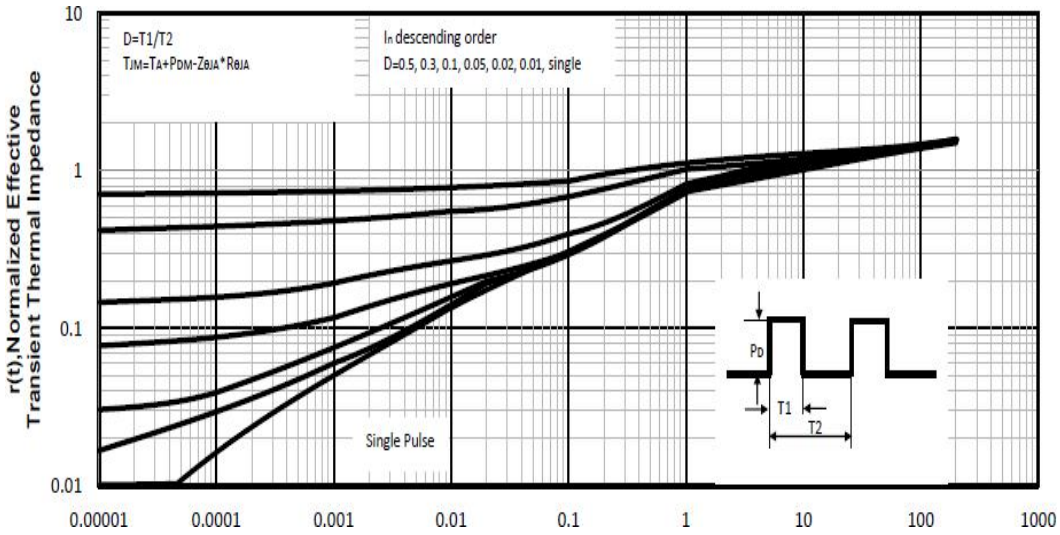


Figure10：Square Wave Pulse Duration（sec）

Test Circuit and Waveform:

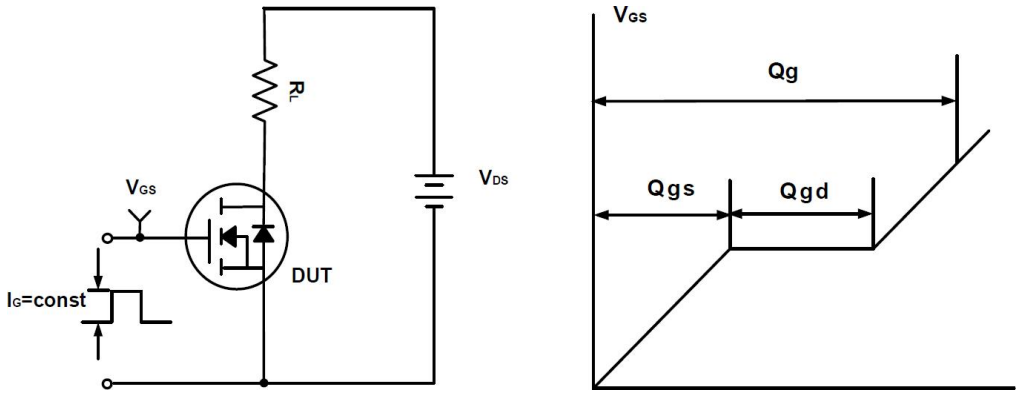


Figure A Gate Charge Test Circuit &Waveforms

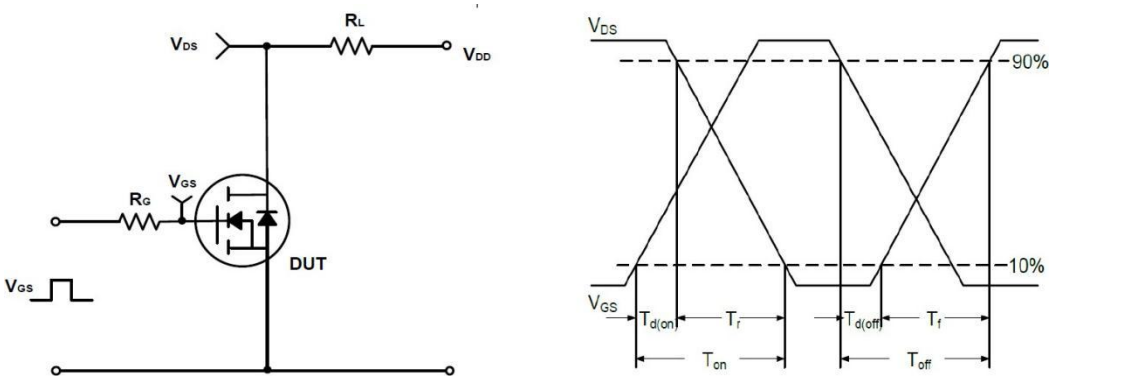


Figure B Switching Test Circuit & Waveforms

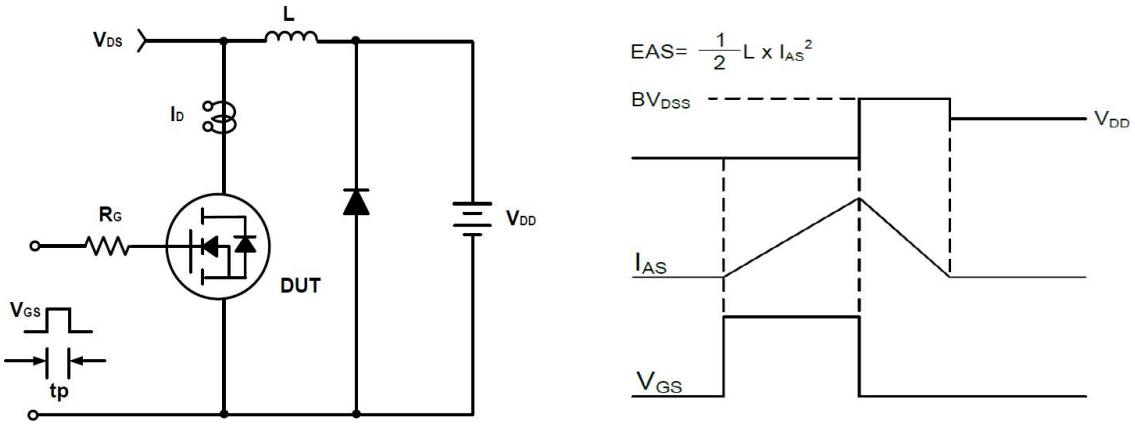
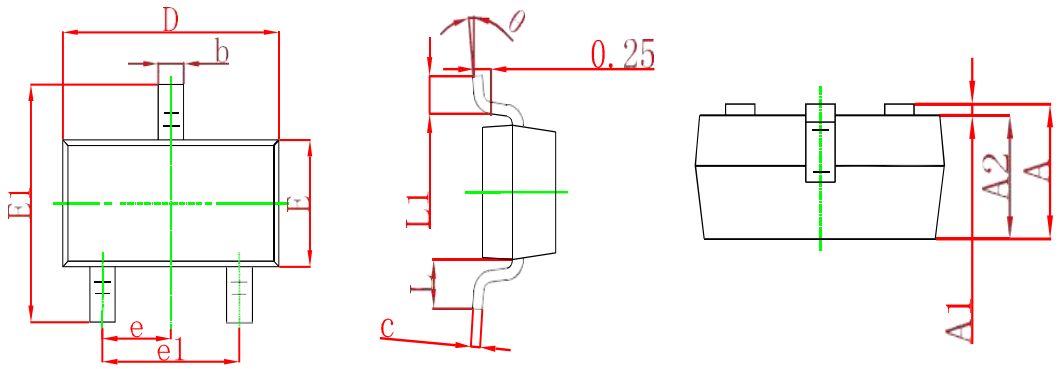


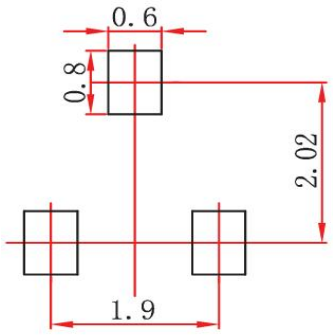
Figure C Unclamped Inductive Switching Circuit & Waveforms

Package Outline



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters
2. General tolerance: ±0.05mm
3. The pad layout is for reference purposes only

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