

Features

High Density Cell Design For Ultra Low On-Resistance
High Power and Current handing capability

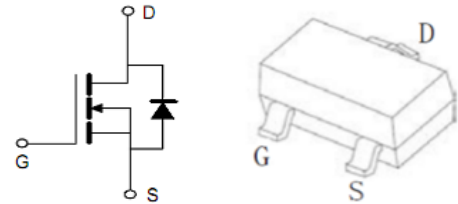
BVDSS	20	V
ID	2	A
RDSON@VGS=4.5V	57	mΩ
RDSON@VGS=2.5V	78	mΩ

Applications

Motor control and drive

Battery Switch

Optimized for Power Management Applications for
Portable Products, such as Aeromodelling, Power bank,
Brushless motor, Main board and Others


SOT-23
Order Information

Product	Package	Marking	Reel Size	Reel	Carton
CL57RN02M	SOT-23	A2sHB	7inch	3000PCS	180000PCS

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	2	A
Mounted on Large Heat Sink				
I _{DM}	Pulse Drain Current Tested (Silicon Limit) (Note1)	TA =25°C	10	A
I _D	Continuous Drain current	TA =25°C	2	A
P _D	Maximum Power Dissipation	TA =25°C	0.6	W
R _{θJA}	Thermal Resistance Junction-to-Ambient (Note2)		208.3	°C/W

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	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	--	1.2	V
R _{DS(ON)}	Drain-Source On-State Resistance (Note3)	VGS=4.5V, ID=2A	--	57	69	mΩ
		VGS=2.5V, ID=1A	--	78	100	mΩ
Dynamic Electrical Characteristics @ T _J = 25°C (unless otherwise stated) (Note4)						
C _{iss}	Input Capacitance	VDS= 10V, VGS=0V, F=1MHz	--	165	--	pF
C _{oss}	Output Capacitance		--	19	--	pF
C _{rss}	Reverse Transfer Capacitance		--	17	--	pF
Q _g	Total Gate Charge	VDS= 10V, ID= 2A, VGS= 4.5V	--	1.96	--	nC
Q _{gs}	Gate-Source Charge		--	0.32	--	nC
Q _{gd}	Gate-Drain Charge		--	0.59	--	nC
Switching Characteristics (Note4)						
t _{d(on)}	Turn-on Delay Time	VDD=10V, ID= 2A, RG=6Ω, VGS=4.5V	--	5.8	--	nS
t _r	Turn-on Rise Time		--	2.9	--	nS
t _{d(off)}	Turn-off Delay Time		--	12	--	nS
t _f	Turn-off Fall Time		--	3.9	--	nS
Source- Drain Diode Characteristics@ T _J = 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.

Typical Characteristics

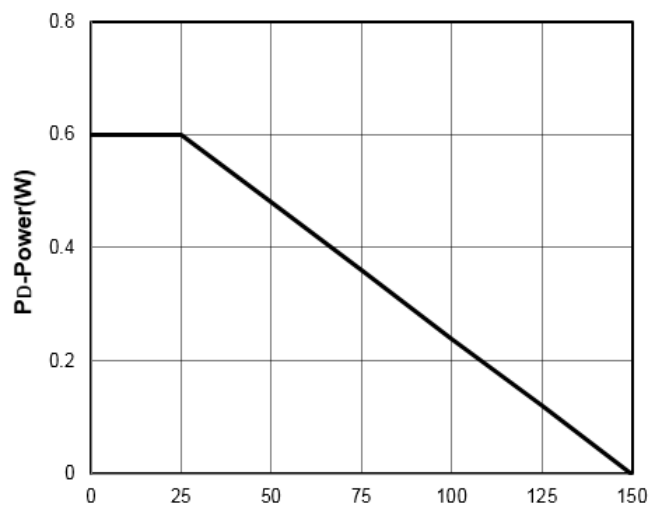


Figure1: T_J Junction Temperature (°C)

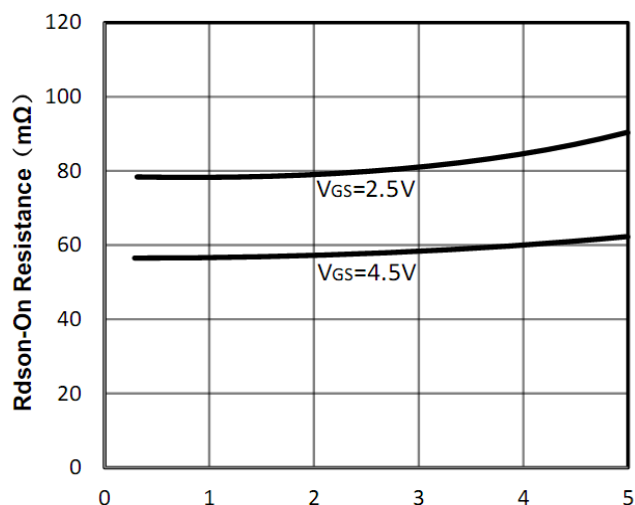


Figure2: I_D Drain Current (A)

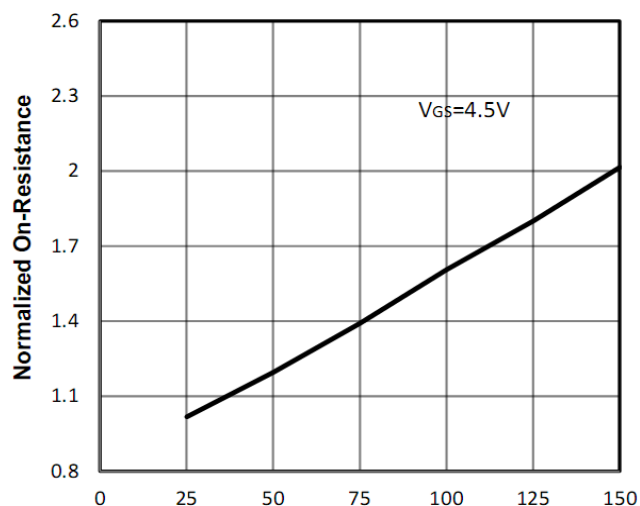


Figure3: T_J Junction Temperature (°C)

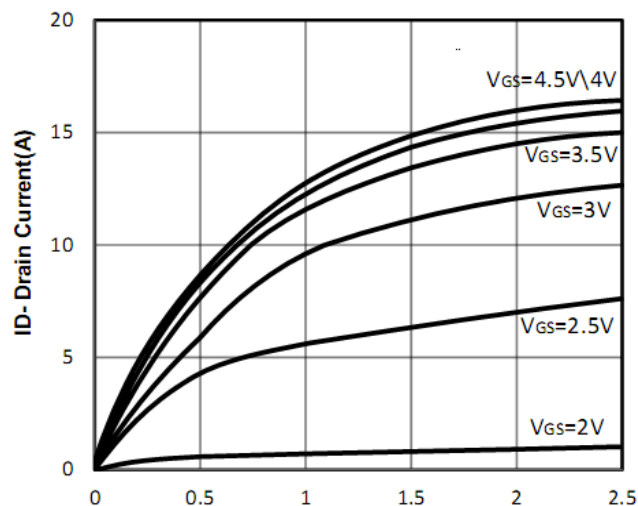


Figure4: V_{DS} Drain-Source Voltage (V)

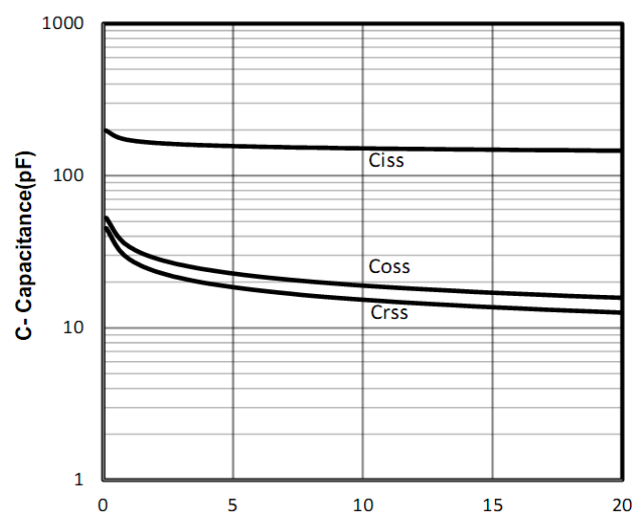


Figure5: V_{DS} Drain-Source Voltage (V)

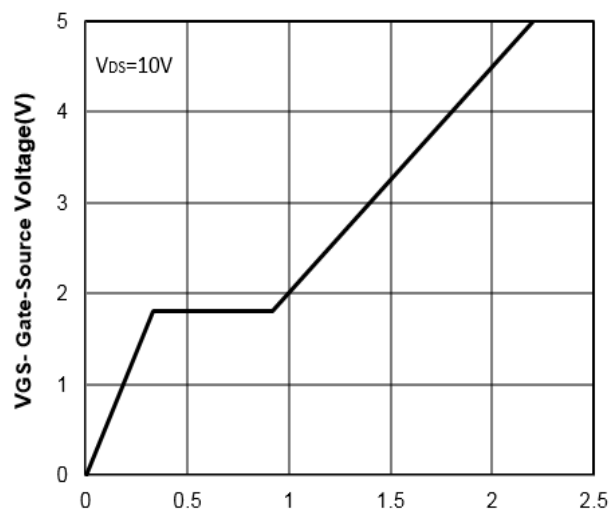


Figure6: Q_g Gate Charge (nC)

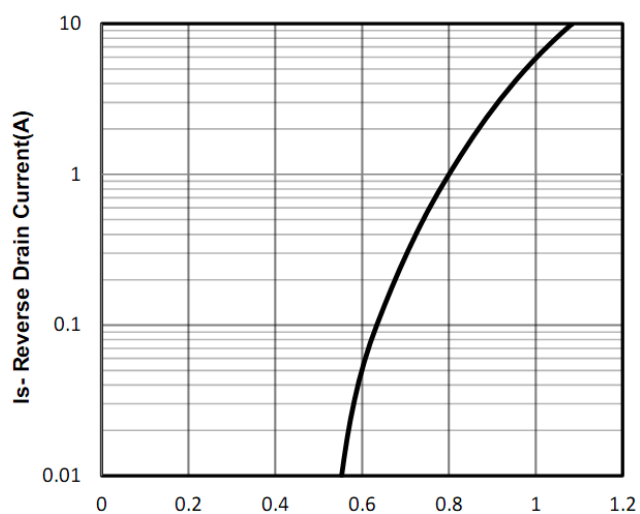


Figure7: Vsd Source-Drain Voltage (V)

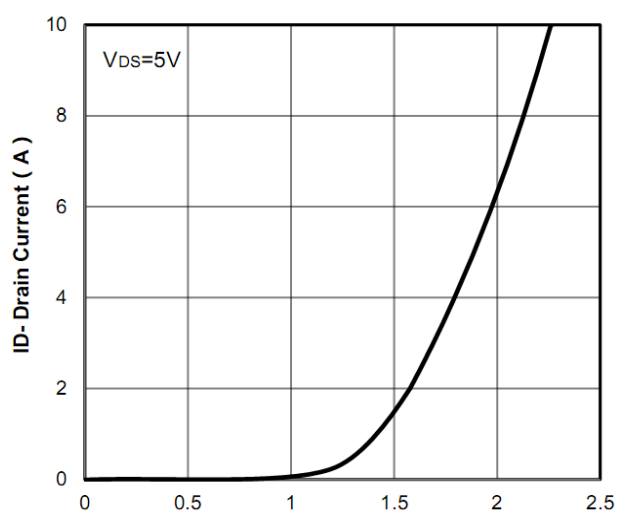


Figure8: Vgs Gate-Source Voltage (V)

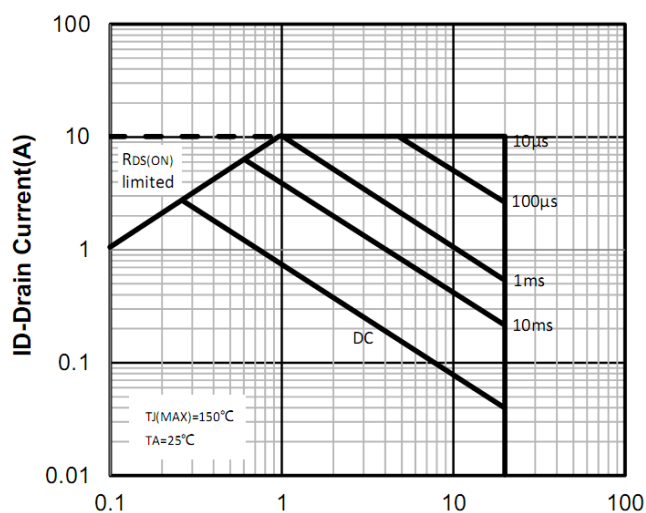


Figure9: Vds Drain -Source Voltage (V)

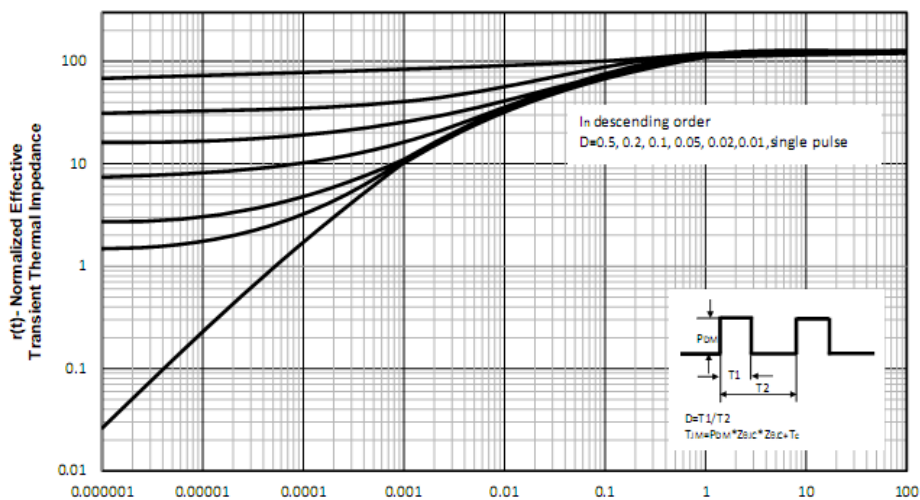


Figure10: Square Wave Pulse Duration (sec)

Test Circuit and Waveform:

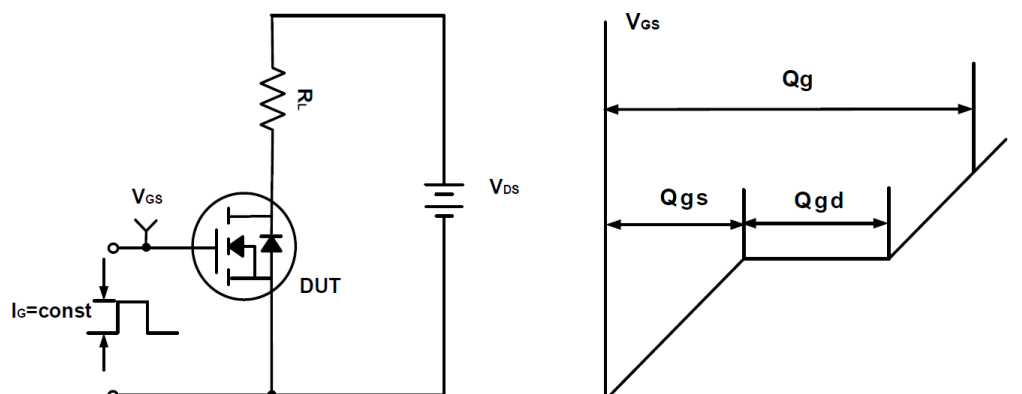


Figure A Gate Charge Test Circuit & Waveforms

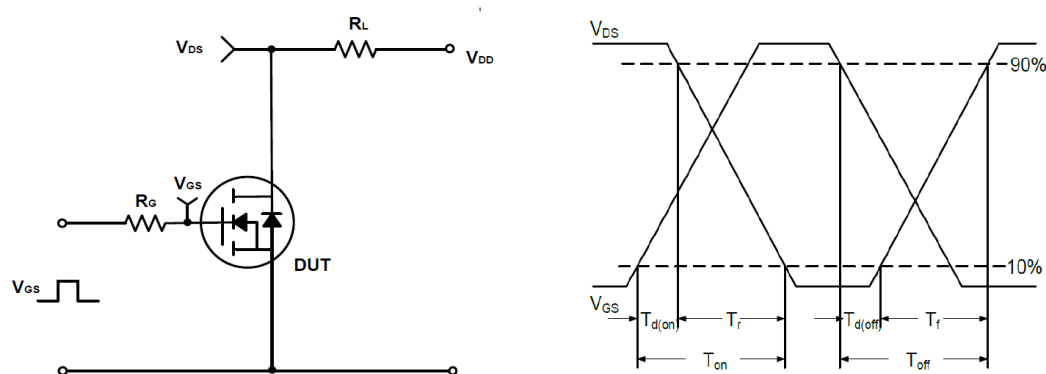
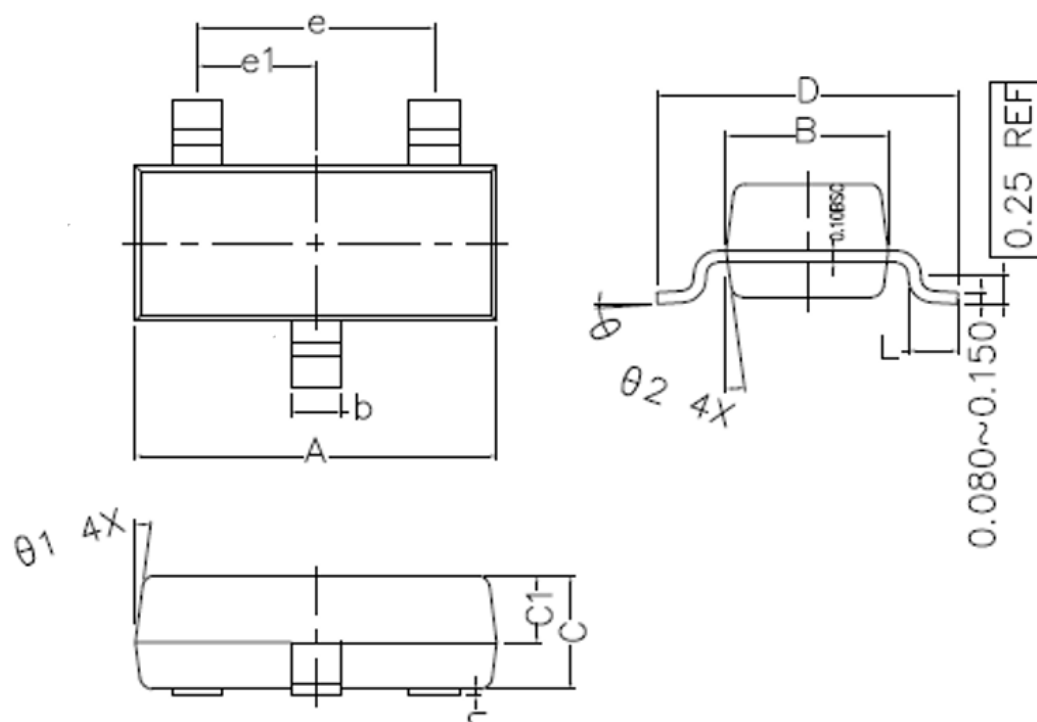


Figure B Switching Test Circuit & Waveforms

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°		

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