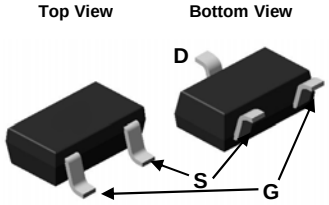
Features

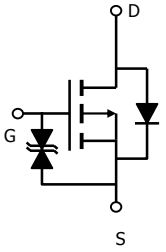
- -20V, -0.75A
  $R_{DS(ON)}$< 600mΩ @ V_{GS} =-4.5V
  $R_{DS(ON)}$< 800mΩ @ V_{GS} =-2.5V
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired
- **ESD PROTECTED!**

Application

- Load Switch
- PWM Application
- Power management



SOT-523



Schematic Diagram

Absolute Maximum Ratings (T_A=25℃ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		-20	V
V_{GSS}	Gate-Source Voltage		±8	V
I_D	Continuous Drain Current	T_A= 25℃	-0.75	A
		T_A= 100℃	-0.5	A
I_{DM}	Pulsed Drain Current note1		-3	A
P_D	Power Dissipation	T_A= 25℃	0.17	W
$R_{\theta JA}$	Thermal Resistance, Junction to Case		735	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	℃

Electrical Characteristics (T_J=25℃ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250μA	-20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-20V, V_{GS}=0V,	-	-	1	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS}=0V, V_{GS}= ±8V	-	-	±10	uA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250μA	-0.4	-0.7	-1.0	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note2	V_{GS}=-4.5V, I_D=-0.5A	150	-	600	mΩ
		V_{GS}=-2.5V, I_D=-0.4A	200	-	800	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=-10V, V_{GS}=0V, f=1.0MHz	-	64	-	pF
C_{oss}	Output Capacitance		-	18	-	pF
C_{rss}	Reverse Transfer Capacitance		-	12	-	pF
Q_g	Total Gate Charge	V_{DS}=-10V, I_D=-0.75A, V_{GS}=-4.5V	-	1.14	-	nC
Q_{gs}	Gate-Source Charge		-	0.37	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	0.25	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=-10V, I_D=-0.5A, R_{GEN}=10Ω, V_{GS}=-4.5V	-	4	-	ns
t_r	Turn-on Rise Time		-	19	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	16	-	ns
t_f	Turn-off Fall Time		-	25	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-0.75	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-3	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S=-0.75A	-	-	-1.2	V

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Performance Characteristics

Figure1: Output Characteristics

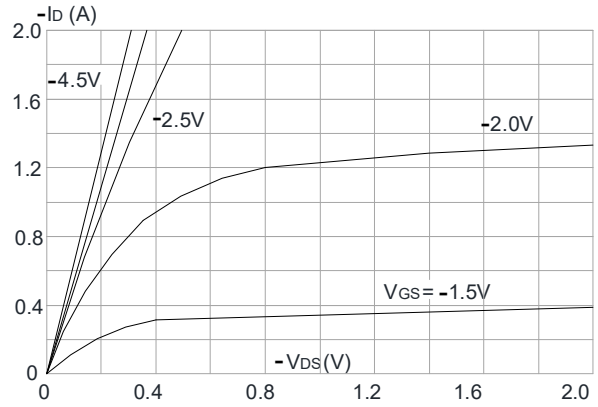


Figure 2: Typical Transfer Characteristics

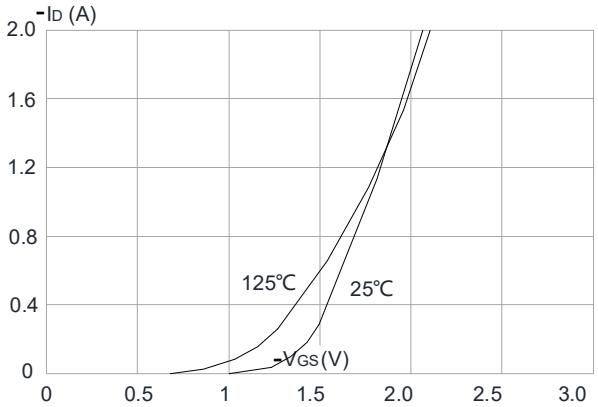


Figure 3: On-resistance vs. Drain Current

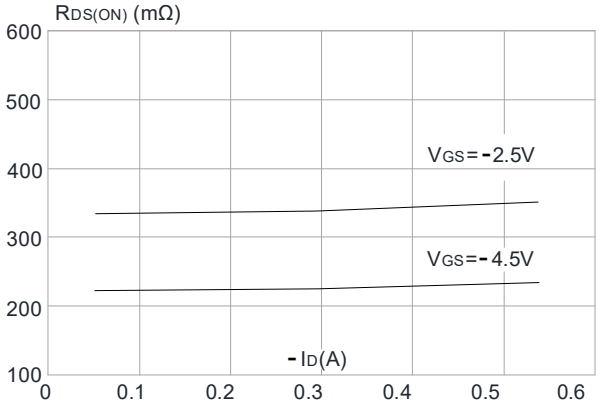


Figure 4: Body Diode Characteristics

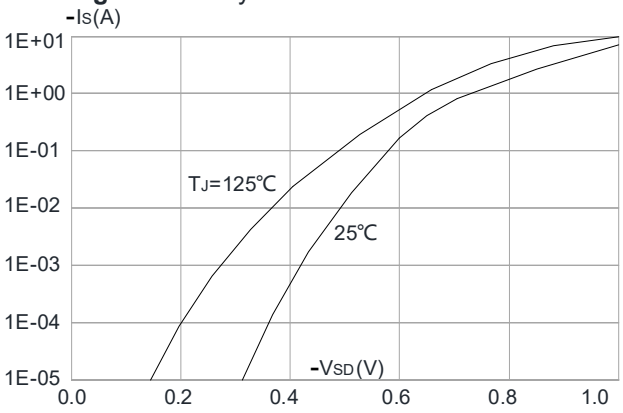


Figure 5: Gate Charge Characteristics

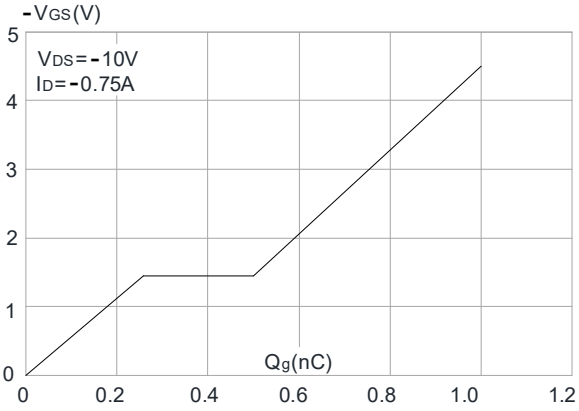


Figure 6: Capacitance Characteristics

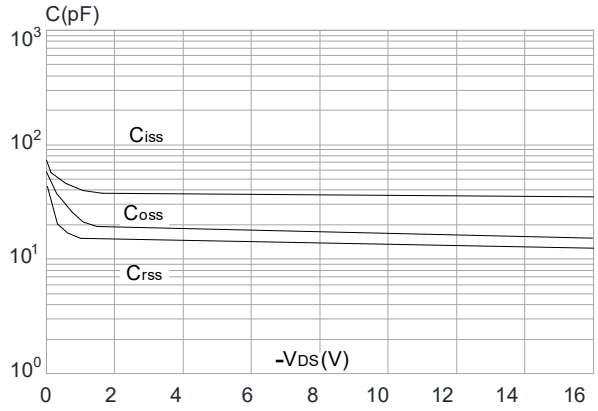


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

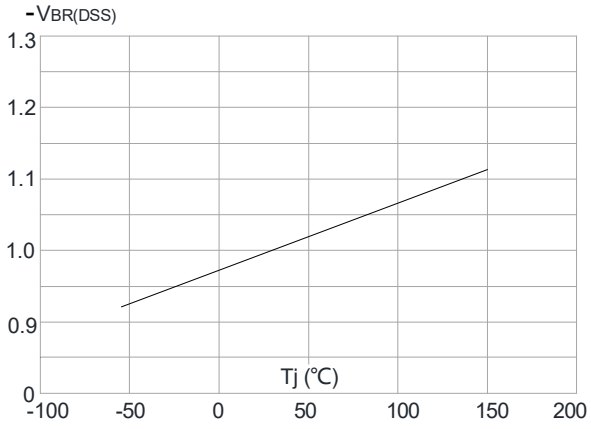


Figure 8: Normalized on Resistance vs. Junction Temperature

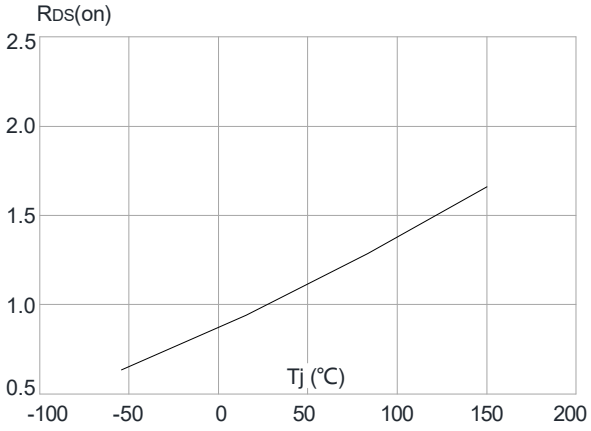


Figure 9: Maximum Safe Operating Area

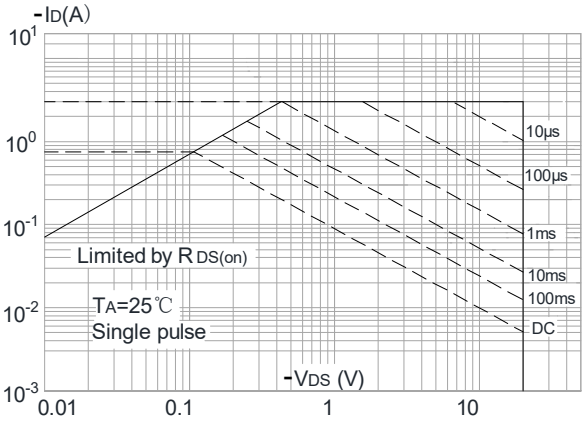


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

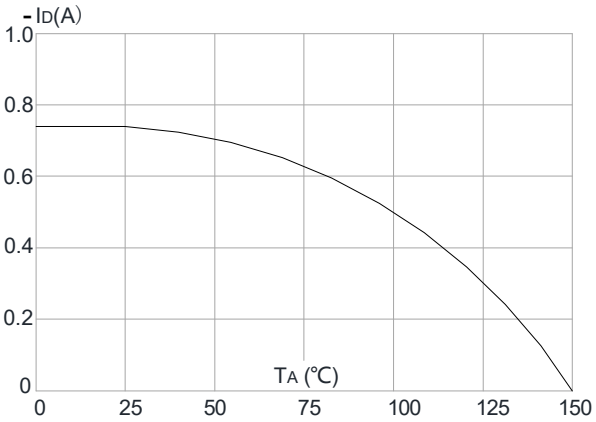
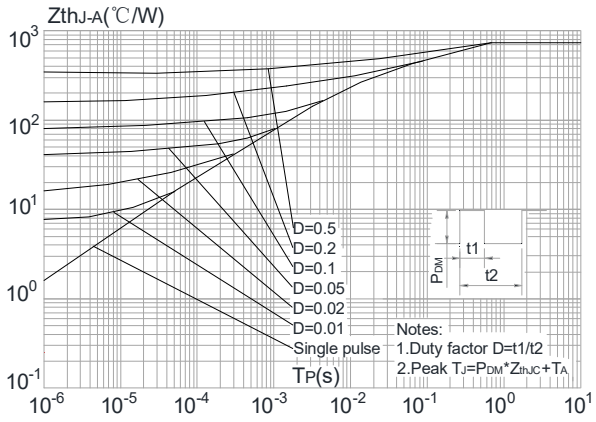
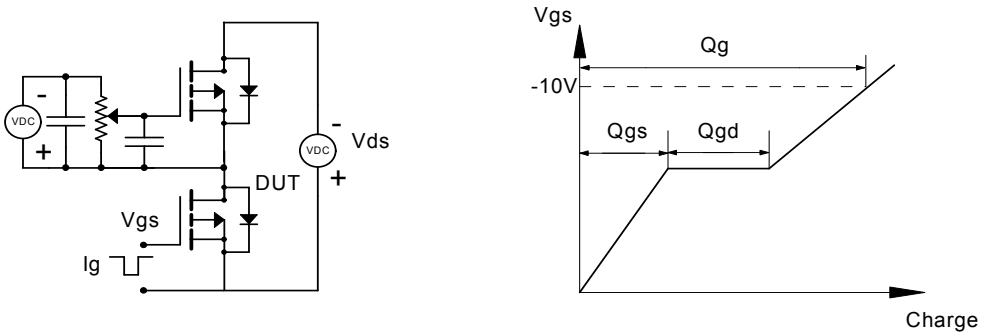


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

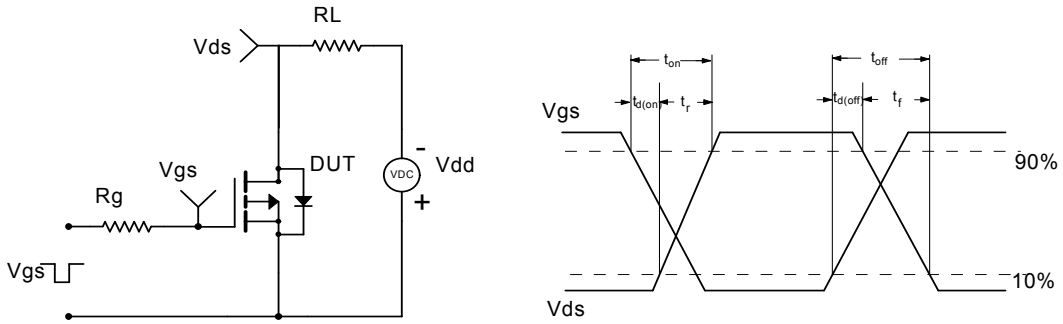


Test Circuit

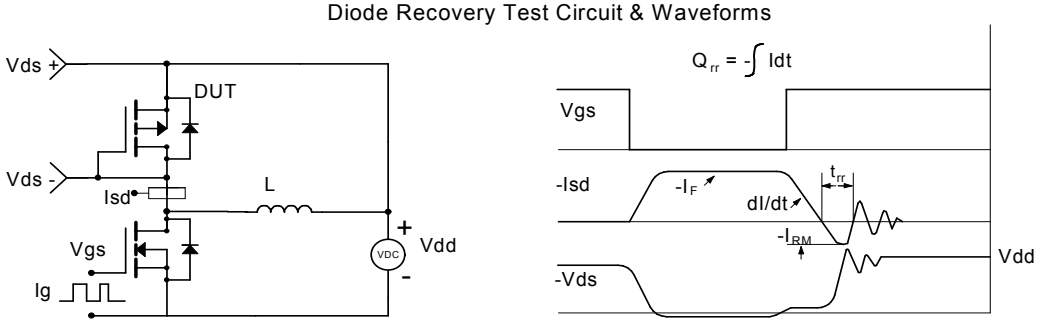
Gate Charge Test Circuit & Waveform



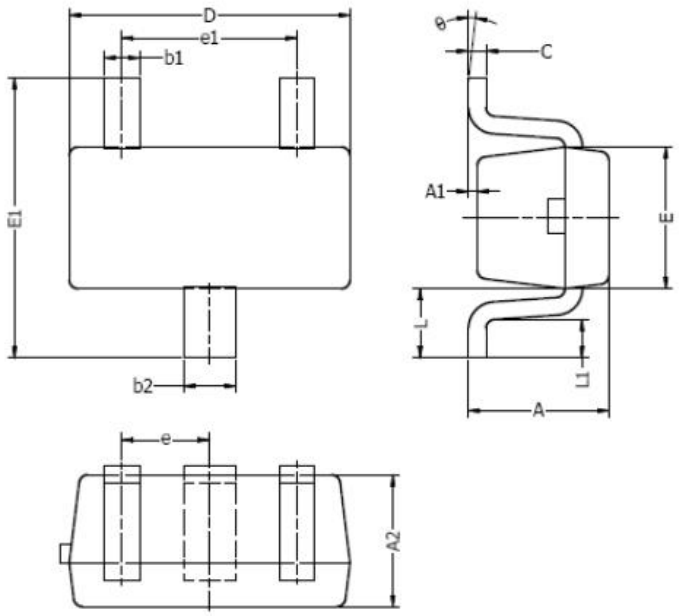
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Mechanical Data-SOT-523



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.70	0.90	0.028	0.035
A1	0.00	0.10	0.000	0.004
A2	0.70	0.80	0.028	0.031
b1	0.15	0.25	0.006	0.010
b2	0.25	0.35	0.010	0.014
c	0.10	0.20	0.004	0.008
D	1.50	1.70	0.059	0.067
E	0.70	0.90	0.028	0.035
E1	1.45	1.75	0.057	0.069
e	0.50 TYP.		0.020 TYP.	
e1	0.90	1.10	0.035	0.043
L	0.40 REF.		0.016 REF.	
L1	0.10	0.30	0.004	0.012
θ	0°	8°	0°	8°

NOTES:
1. Above package outline conforms to JEITA EAIJ ED-7500A SC-75A.
2. Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions.