



Description

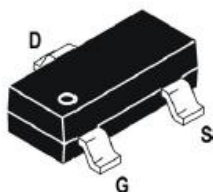
Features

- 20V/6A,
 $R_{DS(ON)} = 12m\Omega(Typ.)@V_{GS}=4.5V$
 $R_{DS(ON)} = 14m\Omega(Typ.)@V_{GS}=2.5V$
- LOW $R_{DS(ON)}$
- Super High Dense Cell Design
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

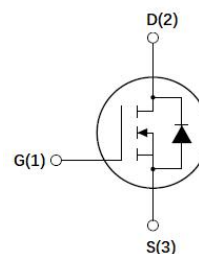
Application

- Power Management
- Load Switch

Package



SOT23-3



N-Channel MOSFET

Absolute Maximum Ratings ($T_C=25^\circ C$ unless otherwise specified)

Symbol	Parameter	Rating	Unit
Common Ratings ($T_A=25^\circ C$ Unless Otherwise Noted)			
V_{DSS}	Drain-Source Voltage	20	V
V_{GSS}	Gate-Source Voltage	± 12	
T_J	Maximum Junction Temperature	150	$^\circ C$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
I_S	Diode Continuous Forward Current	$T_A=25^\circ C$ 1.6	A
Mounted on Large Heat Sink			
$I_{DP}^{(1)}$	200 μs Pulse Drain Current Tested	$T_A=25^\circ C$ 23	A
$I_D^{(2)}$	Continuous Drain Current($V_{GS}=4.5V$)	$T_A=25^\circ C$ 6	A
		$T_A=70^\circ C$ 4.5	
P_D	Maximum Power Dissipation	$T_A=25^\circ C$ 1.27	W
		$T_A=70^\circ C$ 0.78	
R_{JC}	Thermal Resistance-Junction to Case	-	$^\circ C/W$
$R_{JA}^{(3)}$	Thermal Resistance-Junction to Ambient	100	$^\circ C/W$
Drain-Source Avalanche Ratings			
$E_{AS}^{(4)}$	Avalanche Energy, Single Pulsed	-	mJ



Electrical Characteristics (T_C=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	TC736			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V			1	μA
		T _J =125°C			30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	0.5	0.8	1.2	V
I _{GSS}	Gate Leakage Current	V _{GS} =±10V, V _{DS} =0V			±100	nA
R _{DS(ON)} ^⑤	Drain-Source On-state Resistance	V _{GS} =4.5V, I _{DS} =6A		11	14	mΩ
		V _{GS} =2.5V, I _{DS} =5A		14	18	mΩ
Diode Characteristics						
V _{SD} ^⑤	Diode Forward Voltage	I _{SD} =1A, V _{GS} =0V			1	V
t _{rr}	Reverse Recovery Time	I _{SD} =1A, dI _{SD} /dt=100A/μs		16		ns
Q _{rr}	Reverse Recovery Charge			9		nC
Dynamic Characteristics ^⑥						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		1.62		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =10V, Frequency=1.0MHz		610		pF
C _{oss}	Output Capacitance			127		
C _{rss}	Reverse Transfer Capacitance			93		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =10V, I _{DS} =6A, V _{GEN} =4.5V, R _G =6Ω		9		ns
t _r	Turn-on Rise Time			17		
t _{d(OFF)}	Turn-off Delay Time			35		
t _f	Turn-off Fall Time			14		
Gate Charge Characteristics ^⑥						
Q _g	Total Gate Charge	V _{DS} =16V, V _{GS} =4.5V, I _{DS} =6A		12		nC
Q _{gs}	Gate-Source Charge			1.8		
Q _{gd}	Gate-Drain Charge			3.6		

Notes: ①Pulse width limited by safe operating area.

②Calculated continuous current based on maximum allowable junction temperature.

③When mounted on 1 inch square copper board, t_s≤5sec. The value in any given application depends on the user's specific board design.

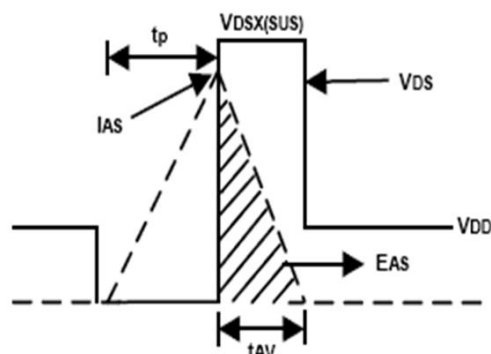
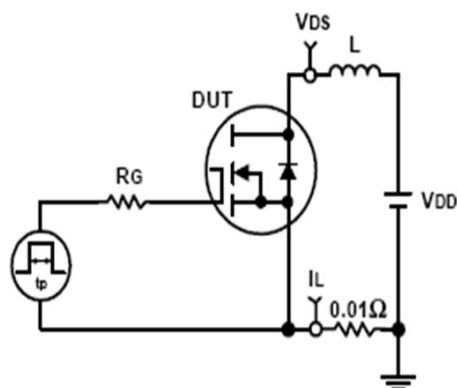
④Limited by T_{Jmax}. Starting T_J = 25°C.

⑤Pulse test; Pulse width≤200μs, duty cycle≤2%.

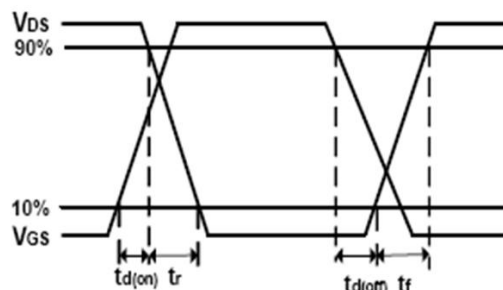
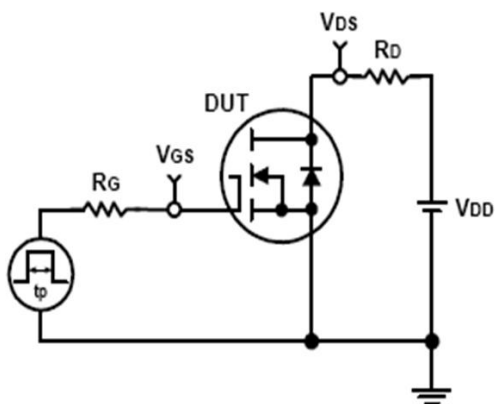
⑥Guaranteed by design, not subject to production testing.



Avalanche Test Circuit and Waveforms



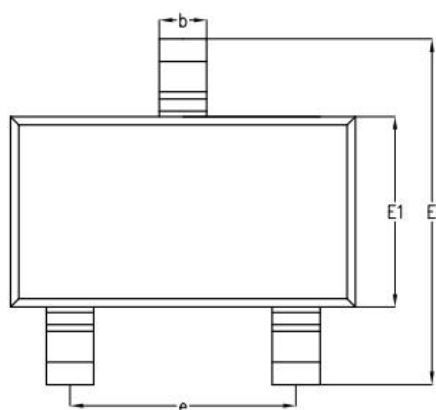
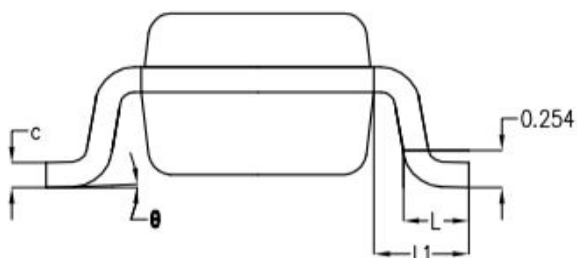
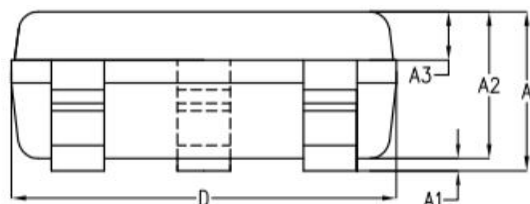
Switching Time Test Circuit and Waveforms





Package Information

➤ SOT23-3(大)



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	-	1.19	1.24
A1	-	0.05	0.09
A2	1.05	1.10	1.15
A3	0.31	0.36	0.41
b	0.35	0.40	0.45
c	0.12	0.17	0.22
D	2.85	2.90	2.95
E	2.80	2.90	3.00
E1	1.55	1.60	1.65
e	1.90BSC		
L	0.37	0.45	0.53
L1	0.65BSC		
θ	0°	2°	8°

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