

20V N-Channel Mosfet

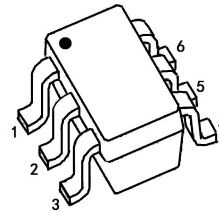
FEATURES

- $R_{DS(ON)} \leq 16m\Omega$ (12m Ω Typ.)
@ $V_{GS}=4.5V$
- $R_{DS(ON)} \leq 22m\Omega$ (16m Ω Typ.)
@ $V_{GS}=2.5V$

APPLICATIONS

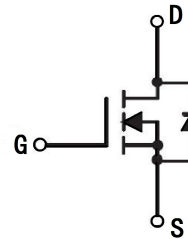
- Power switching application
- Load switching
- Uninterruptible power supply

SOT-23-6L



1: D 3: G 5: D
2: D 4: S 6: D

N-CHANNEL MOSFET



MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 10	V
I_D	Drain Current-Continuous	9	A
I_{DM}	Pulsed Drain Current	36	A
P_D	Maximum Power Dissipation	1.5	W
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	83	$^{\circ}C/W$
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	$^{\circ}C$

MOSFET ELECTRICAL CHARACTERISTICS Ta=25 °C unless otherwise specified

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 20V,$ $V_{GS} = 0V, T_J = 25^\circ C$	-	-	1	μA
I_{GSS}	Gate to Body Leakage Current	$V_{GS} = \pm 10V, V_{DS} = 0V$	-	-	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.5	0.7	1.2	V
$R_{DS(on)}$	Static Drain-Source On-Resistance ^{note1}	$V_{GS} = 4.5V, I_D = 8A$	-	12	16	m Ω
		$V_{GS} = 2.5V, I_D = 6A$	-	16	22	
Dynamic Characteristics ^{note2}						
C_{iss}	Input Capacitance	$V_{DS} = 10V, V_{GS} = 0V$ $f = 1.0MHz$	-	865	-	pF
C_{oss}	Output Capacitance		-	105	-	pF
C_{rss}	Reverse Transfer Capacitance		-	55	-	pF
Switching Characteristics ^{note2}						
$t_{d(on)}$	Turn-On Delay Time	$V_{GS} = 5V, V_{DS} = 4V,$ $R_G = 1\Omega, I_D = 4A$	-	-	10	ns
t_r	Turn-On Rise Time		-	-	20	ns
$t_{d(off)}$	Turn-Off Delay Time		-	-	32	ns
t_f	Turn-Off Fall Time		-	-	12	ns
Drain-Source Diode Characteristics and Maximum Ratings						
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS} = 0V, I_S = 4A$ $T_J = 25^\circ C$	-	-	1.2	V

Notes: 1. Pulse Test: Pulse width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

2. Guaranteed by design, not subject to production

TYPICAL CHARACTERISTICS

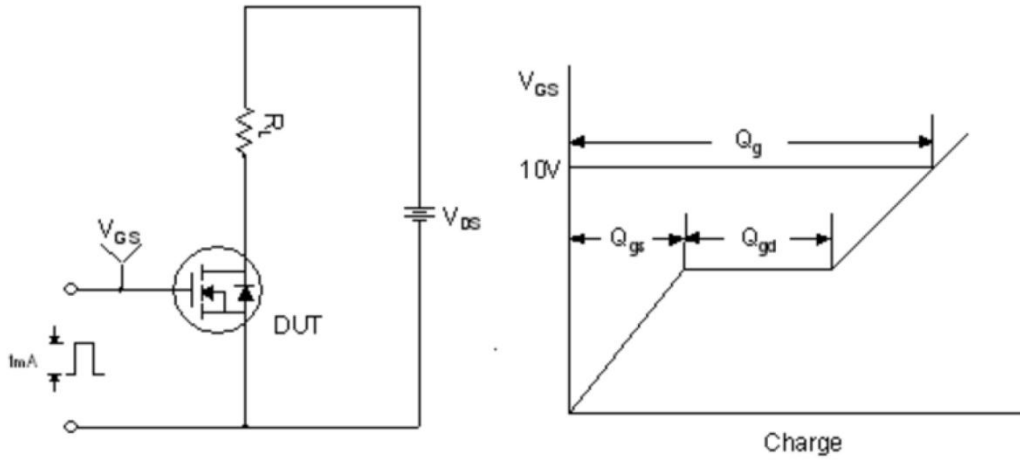


Figure 1. Gate Charge Test Circuit & Waveform

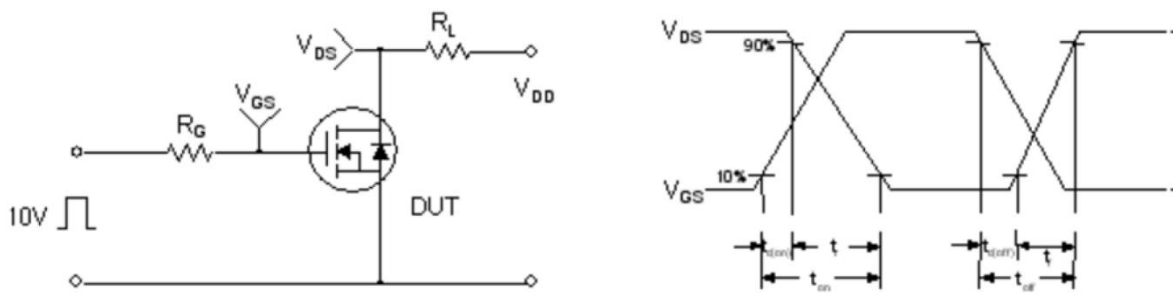


Figure 2. Resistive Switching Test Circuit & Waveforms

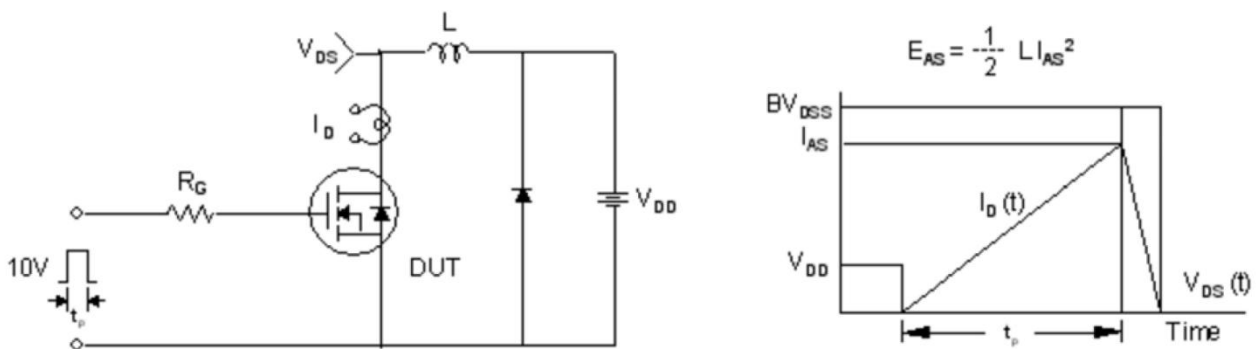


Figure 3. Unclamped Inductive Switching Test Circuit & Waveforms

TYPICAL CHARACTERISTICS (cont.)

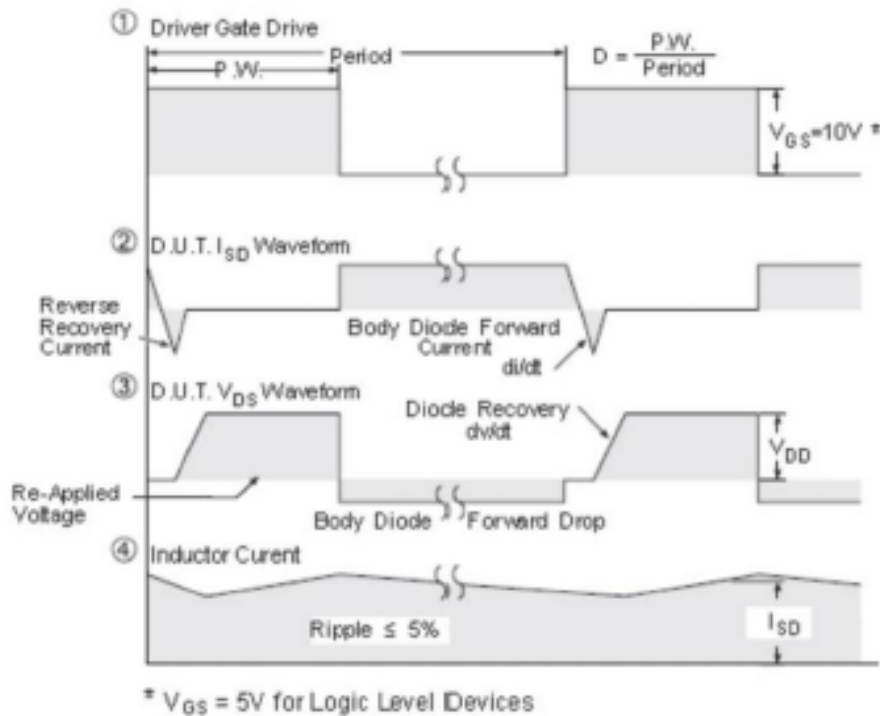
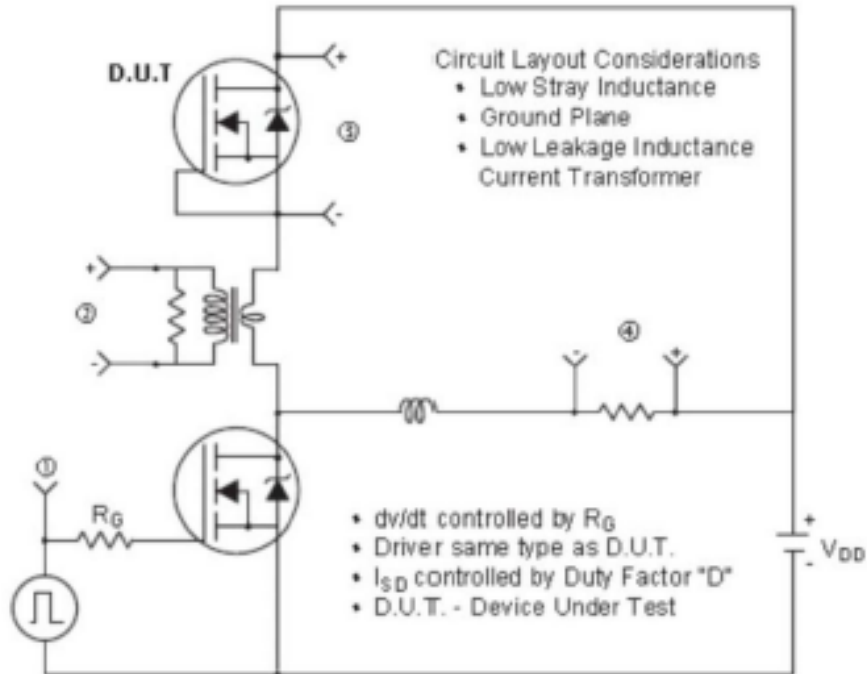
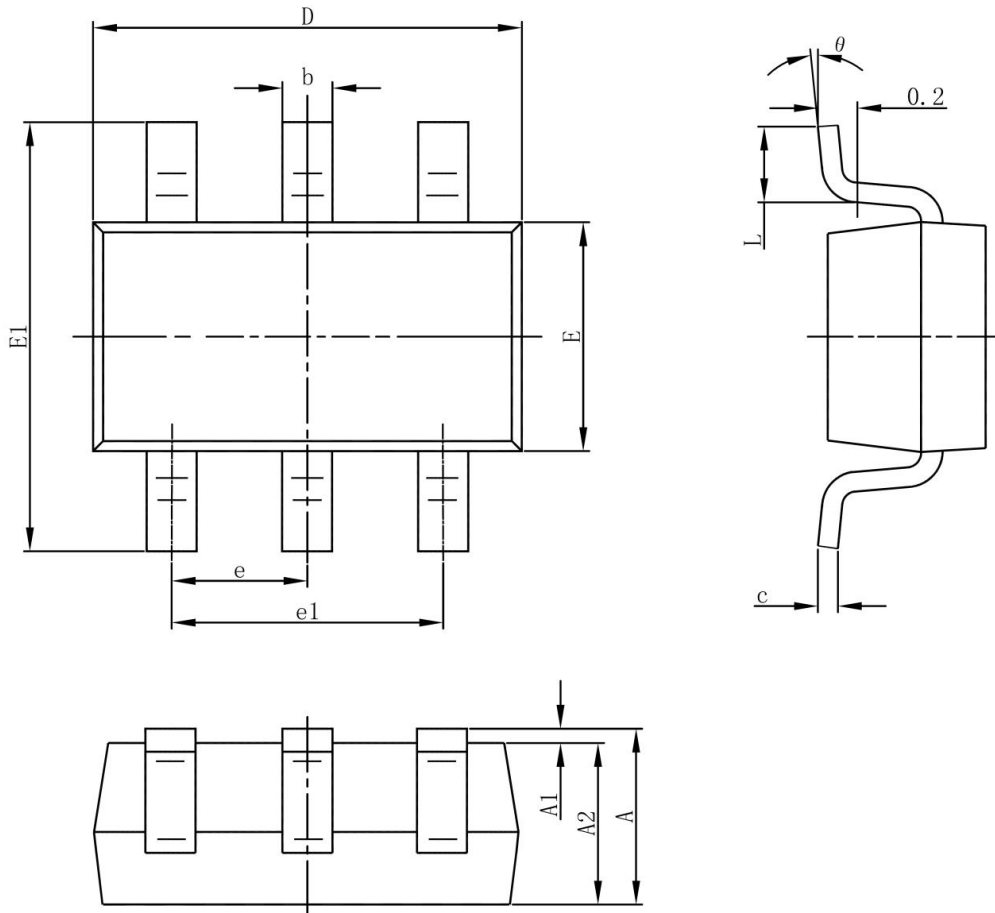


Figure 4. Peak Diode Recovery dv/dt Test Circuit & Waveforms (For N-channel)

SOT-23-6L PACKAGE OUTLINE DRAWING



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°