

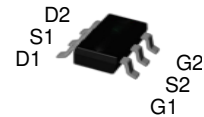
Features

- 40V/6.3A,
 $R_{DS(ON)}=28m\Omega(\text{typ.}) @ V_{GS}=10V$
 $R_{DS(ON)}=40m\Omega(\text{typ.}) @ V_{GS}=4.5V$
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

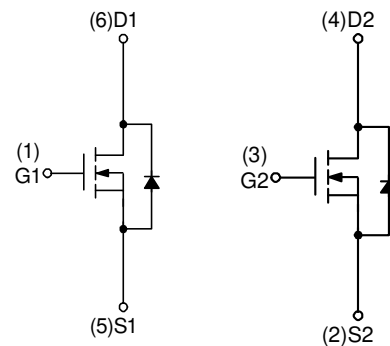
Applications

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.
- Load Switch

Pin Description



Top View of SOT-23-6



N-Channel MOSFET

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter		Rating	Unit
V_{DSS}	Drain-Source Voltage		40	V
V_{GSS}	Gate-Source Voltage		± 20	
I_D	Continuous Drain Current	$T_A = 25^\circ\text{C}$	6.3	A
		$T_A = 70^\circ\text{C}$	4.7	
I_{DM}	300 μs Pulsed Drain Current	$V_{GS} = 10\text{V}$	20	
I_S	Diode Continuous Forward Current		1	
T_J	Maximum Junction Temperature		150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range		-55 to 150	
P_D	Maximum Power Dissipation	$T_A = 25^\circ\text{C}$	1	W
		$T_A = 70^\circ\text{C}$	0.64	
$R_{\theta JA}^*$	Thermal Resistance-Junction to Ambient	Steady state	125	$^\circ\text{C/W}$

Note: *Surface Mounted on 1in² pad area.

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	40	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =32V, V _{GS} =0V	-	-	1	μA
		T _J =85°C	-	-	30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.3	1.8	2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±10	μA
R _{DS(ON)} ^a	Drain-Source On-State Resistance	V _{GS} = 10V, I _{DS} =4A	-	28	32	mΩ
		V _{GS} =4.5V, I _{DS} =3A	-	40	45	
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} = 1A, V _{GS} =0V	-	0.75	1.1	V
t _{rr}	Reverse Recovery Time	I _{SD} =4A, dI _{SD} /dt=100A/μs	-	9.2	-	ns
Q _{rr}	Reverse Recovery Charge		-	4.3	-	nC

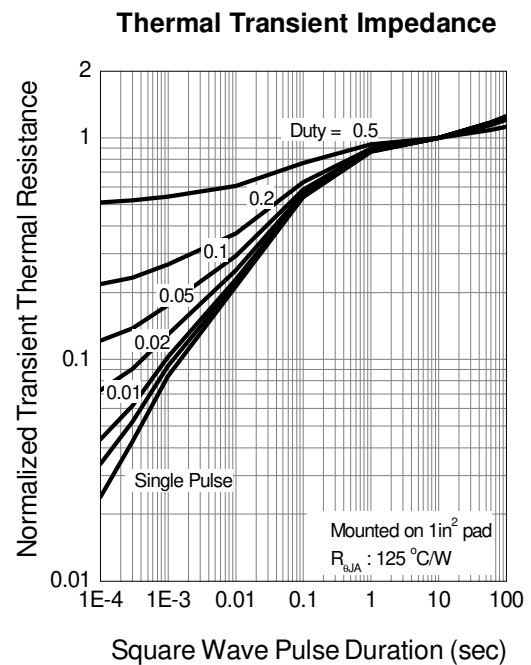
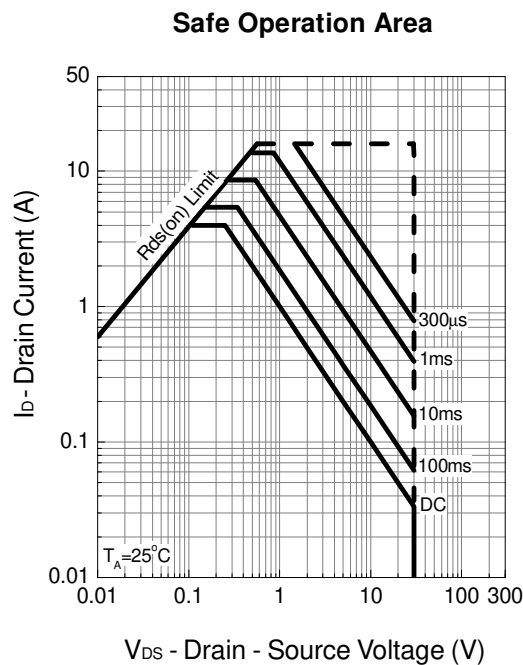
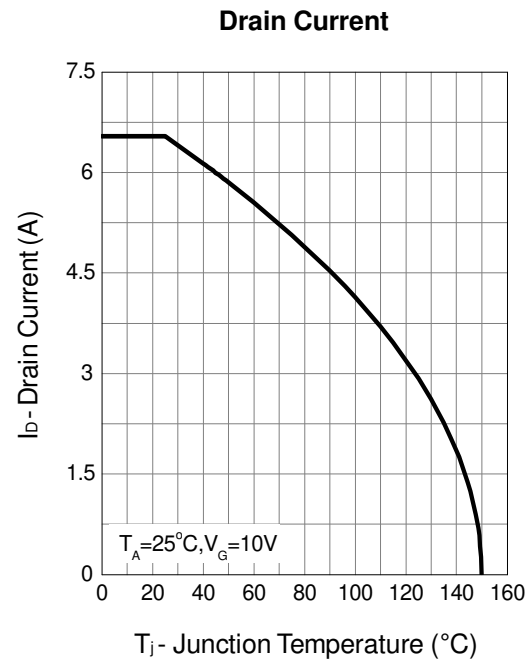
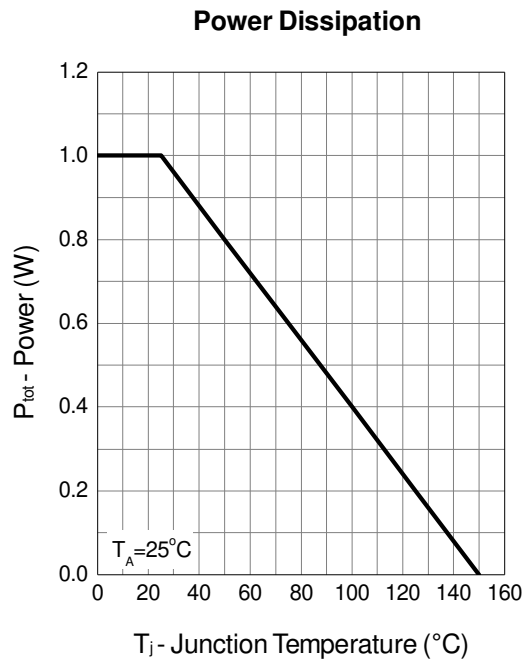
Electrical Characteristics (Cont.) ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit	
Dynamic Characteristics ^b							
R _g	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	2.3	-	Ω	
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, Frequency=1.0MHz	-	215	-	pF	
C _{oss}	Output Capacitance		-	37	-		
C _{rss}	Reverse Transfer Capacitance		-	28	-		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =15V, R _L =15Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	5.3	8	ns	
T _r	Turn-on Rise Time		-	11	16		
t _{d(OFF)}	Turn-off Delay Time		-	12	17		
T _f	Turn-off Fall Time		-	2.6	4		
Gate Charge Characteristics ^b							
Q _g	Total Gate Charge	V _{DS} =15V, I _{DS} =4A	V _{GS} =4.5V,	-	3	-	nC
			V _{GS} =10V	-	5.8	-	
Q _{gs}	Gate-Source Charge	V _{DS} =15V, V _{GS} =10V, I _{DS} =4A	-	1.1	-		
Q _{gd}	Gate-Drain Charge		-	1.5	-		
Q _{gth}	Threshold Gate Charge		-	0.5	-		

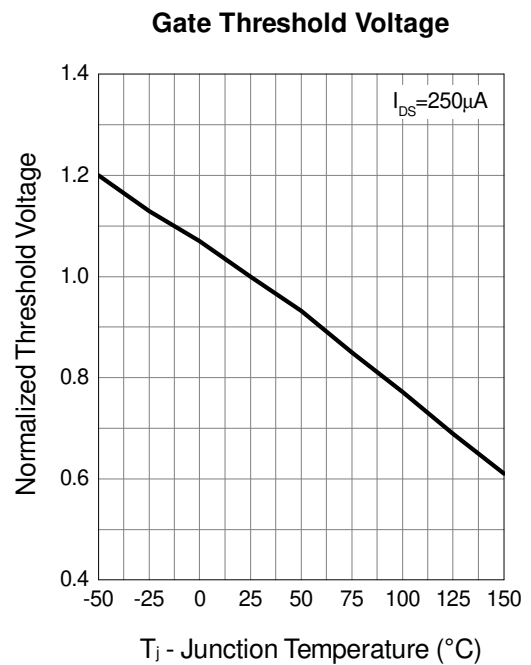
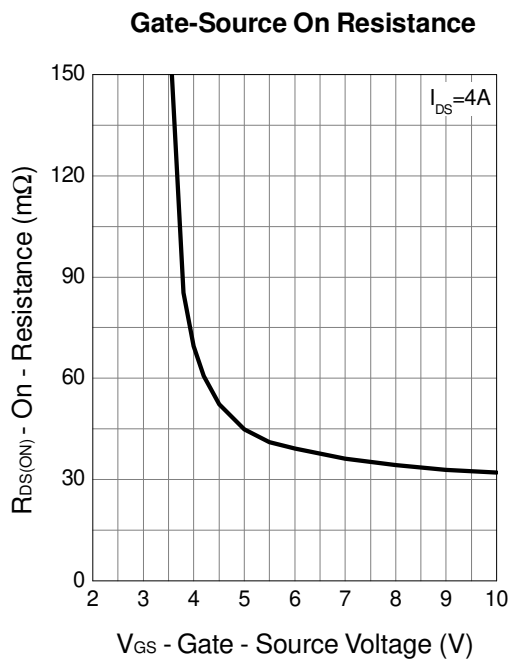
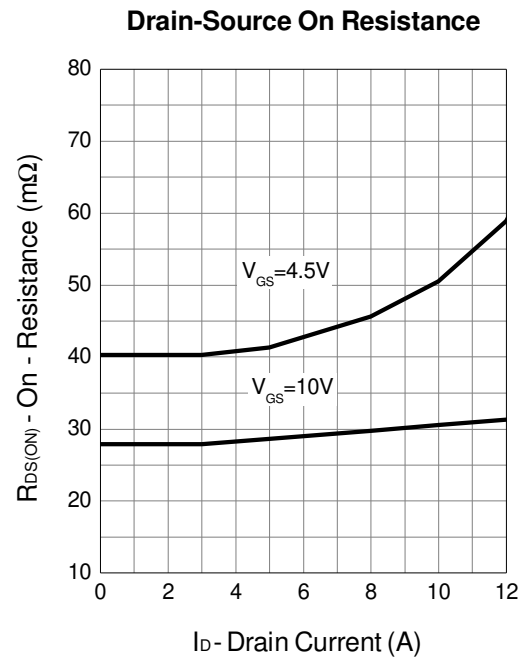
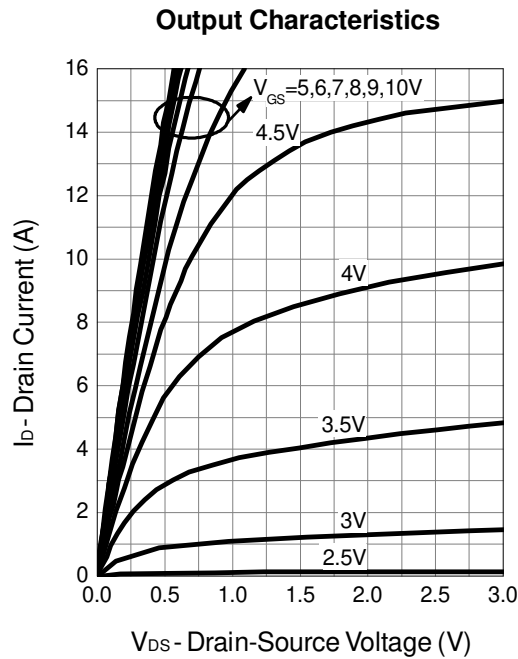
Note a: Pulse test; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Note b: Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

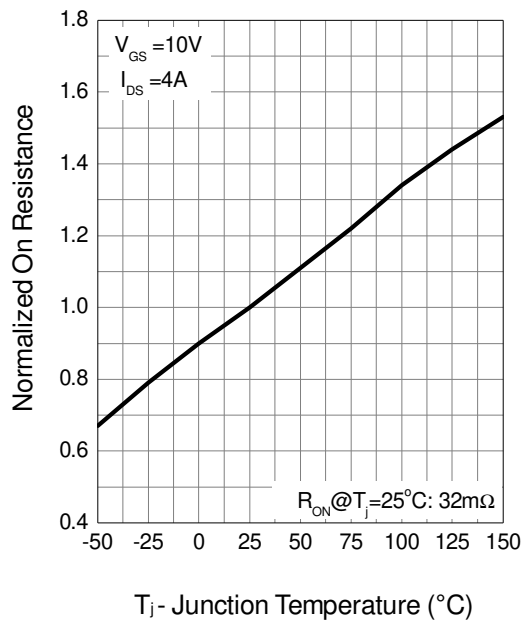


Typical Operating Characteristics (Cont.)

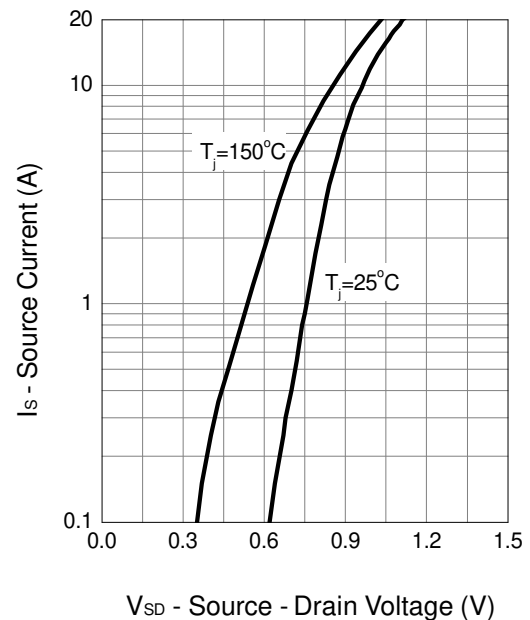


Typical Operating Characteristics (Cont.)

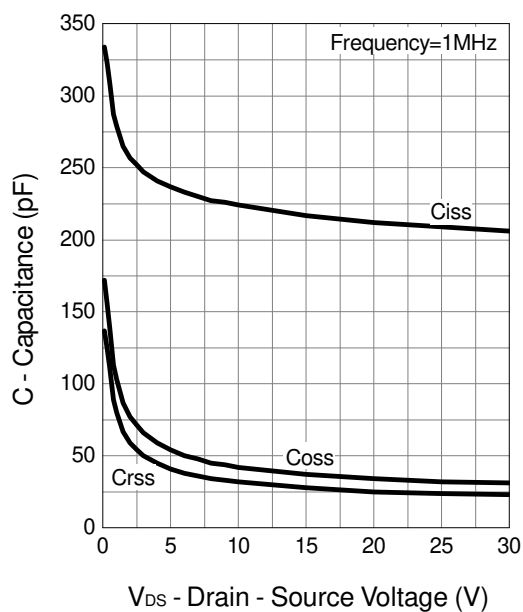
Drain-Source On Resistance



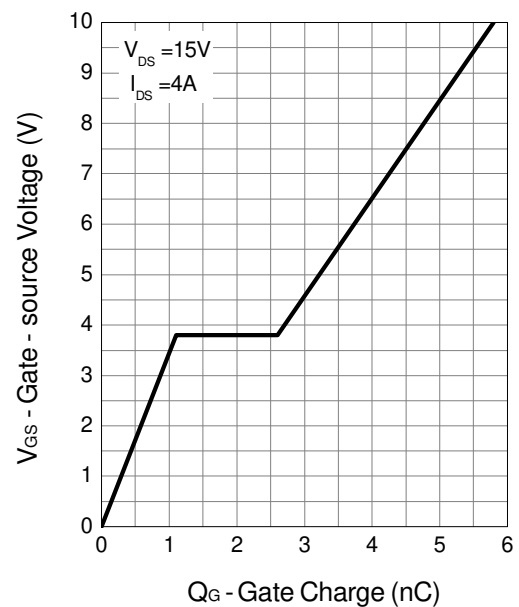
Source-Drain Diode Forward



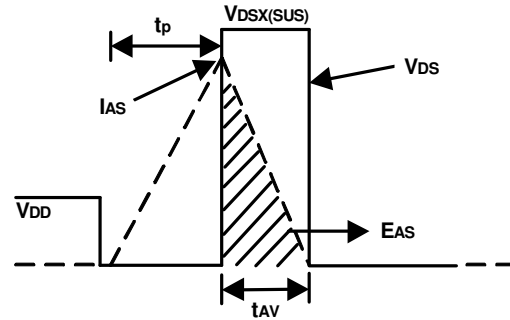
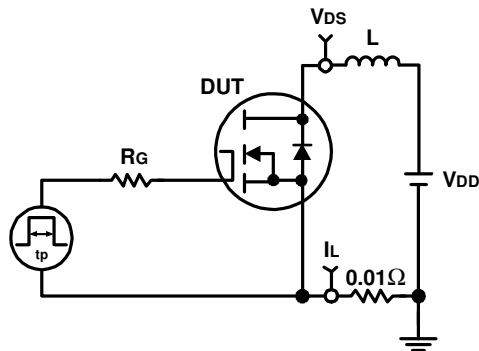
Capacitance



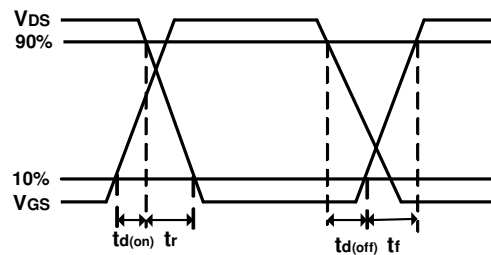
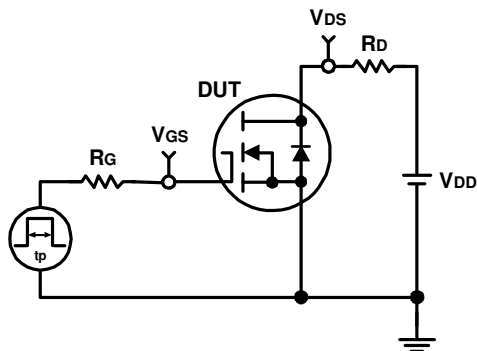
Gate Charge



Avalanche Test Circuit and Waveforms

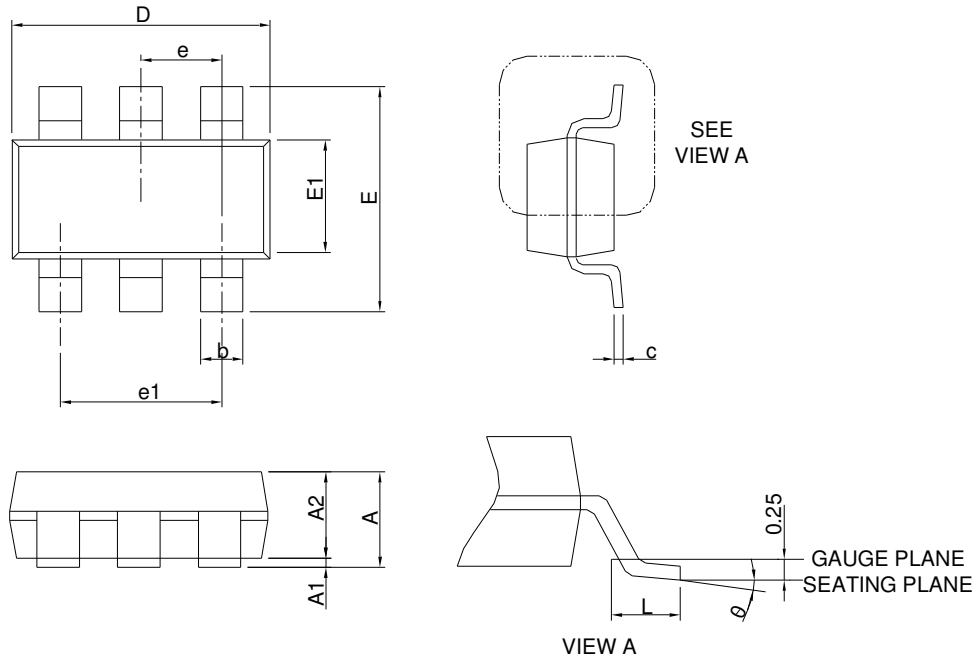


Switching Time Test Circuit and Waveforms



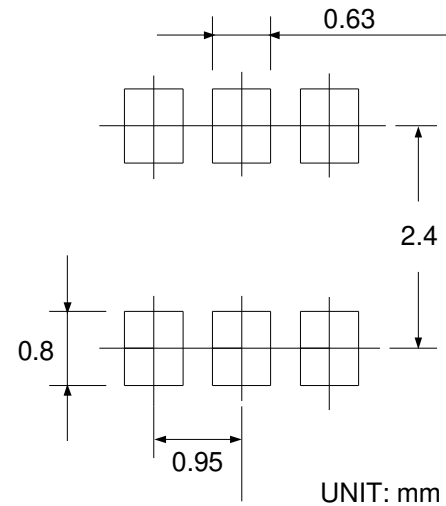
Package Information

SOT-23-6



SYMBOL	SOT-23-6			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	-	1.25	-	0.049
A1	0.00	0.05	0.000	0.002
A2	0.90	1.20	0.035	0.047
b	0.30	0.50	0.012	0.020
c	0.08	0.22	0.003	0.009
D	2.70	3.10	0.106	0.122
E	2.60	3.00	0.102	0.118
E1	1.40	1.80	0.055	0.071
e	0.95 BSC		0.037 BSC	
e1	1.90 BSC		0.075 BSC	
L	0.30	0.60	0.012	0.024
θ	0°	8°	0°	8°

RECOMMENDED LAND PATTERN



Note : 1. Follow JEDEC TO-178 AB.

2. Dimension D and E1 do not include mold flash, protrusions or gate burrs. Mold flash, protrusion or gate burrs shall not exceed 10 mil per side.