LIXI

Leading Circuit Protection Products and Solutions

FEATURE

- High-Side Switching
- Low On-Resistance
- Low Threshold
- Fast Switching Speed
- ESD protected

APPLICATIONS

- Drivers:Relays, Solenoids, Lamps,Hammers, Displays, Memories
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Cell Phones, Pagers

Marking

- Marking:C

N-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}MAX$	I_D
20V	700mΩ@4.5V	500mA
	850mΩ@2.5V	

PACKAGE
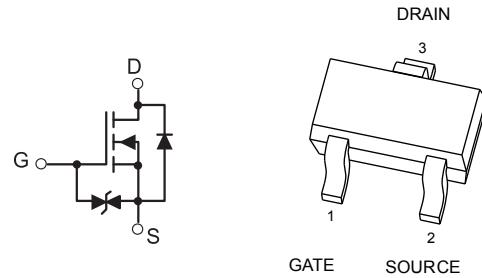
SOT-523

Maximum ratings (Ta=25℃ unless otherwise noted)

| Parameter	Symbol	Value	Unit
Drain-Source voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GS}	±10	
Drain Current-Continuous	$I_{D(DC)}$	500	mA
Drain Current -Pulsed(note1)	$I_{DM(pulse)}$	1000	
Power Dissipation (note 2 , T_a=25℃)	P_D	150	mW
Maximum Power Dissipation (note 3 , T_c=25℃)		275	
Thermal Resistance from Junction to Ambient	$R_{θJA}$	833	℃/W
Thermal Resistance from Junction to Case	$R_{θJC}$	455	
Storage Temperature	T_j	150	℃
Junction Temperature	T_{stg}	-55 ~+150	

Ta=25 ℃ unless otherwise specified

| Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
On/Off States						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250µA	20			V
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250µA	0.45	0.8	1.2	
Gate-Body Leakage Current	I_{GSS}	V_{DS} =0V, V_{GS} =±4.5V			±1	µA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =16V, V_{GS} =0V			100	nA
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} =4.5V, I_D =600mA		250	700	mΩ
		V_{GS} =2.5V, I_D =500mA		330	850	
Forward Transconductance	g_{FS}	V_{DS} =10V, I_D =400mA		1		S
Dynamic Characteristics						
Input Capacitance (note 4)	C_{iss}	V_{DS} =16V,V_{GS} =0V,f =1MHz		100		pF
Output Capacitance (note 4)	C_{oss}			16		
Reverse Transfer Capacitance (note 4)	C_{rss}			12		
Total Gate Charge	Q_g	V_{DS} =10V,V_{GS} =4.5V, I_D =250mA		750		nC
Gate-Source Charge	Q_{gs}			75		
Gate-Drain Charge	Q_{gd}			225		
Switching Times (note 4)						
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=10V, R_L=47Ω, I_D=200mA, V_{GS}=4.5V,R_G=10Ω		5		nS
Rise Time	t_r			5		
Turn-Off Delay Time	$t_{d(off)}$			25		
Fall Time	t_f			11		
Drain-Source Diode Characteristics						
Drain-Source Diode Forward Voltage (note 5)	V_{SD}	I_S=0.15A, V_{GS} = 0V			1.2	V

Notes:
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. This test is performed with no heat sink at Ta=25℃.
3. This test is performed with infinite heat sink at Tc=25℃.
4.These parameters have no way to verify.
5. Pulse Test : Pulse Width≤300µs, Duty Cycle≤0.5%.

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Typical Characteristics

Output Characteristics

T_a=25℃
Pulsed

5.5V
4.5V
3.5V
2.5V
V_{GS}=1.5V

DRAIN CURRENT I_D (A)

DRAIN TO SOURCE VOLTAGE V_{DS} (V)
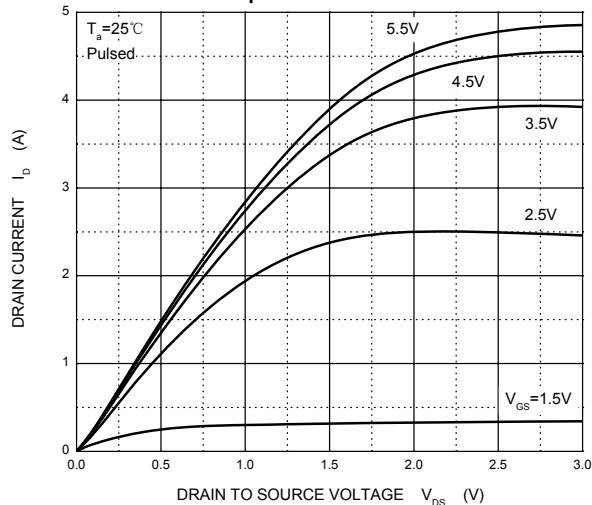
Transfer Characteristics

V_{DS}=16V
Pulsed

T_a=100℃
T_a=25℃

DRAIN CURRENT I_D (mA)

GATE TO SOURCE VOLTAGE V_{GS} (V)

$R_{DS(ON)}$ ── I_D

T_a=25℃
Pulsed

V_{GS}=2.5V
V_{GS}=4.5V

ON-RESISTANCE $R_{DS(ON)}$ (mΩ)

DRAIN CURRENT I_D (mA)

$R_{DS(ON)}$ ── V_{GS}

T_a=25℃
Pulsed

I_D=600mA

ON-RESISTANCE $R_{DS(ON)}$ (mΩ)

GATE TO SOURCE VOLTAGE V_{GS} (V)

I_S ── V_{SD}

T_a=25℃
Pulsed

SOURCE CURRENT I_S (mA)

SOURCE TO DRAIN VOLTAGE V_{SD} (V)

Threshold Voltage

I_D=250uA

THRESHOLD VOLTAGE V_{TH} (V)

JUNCTION TEMPERATURE T_J (℃)

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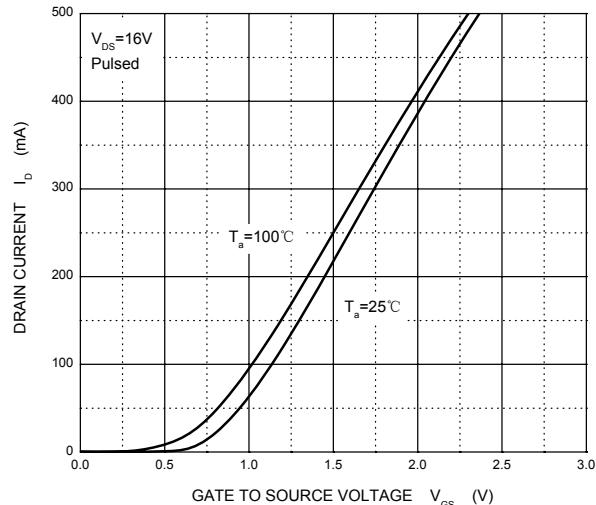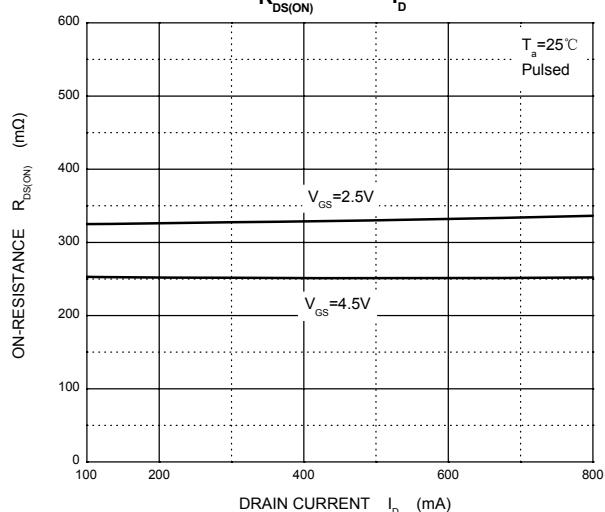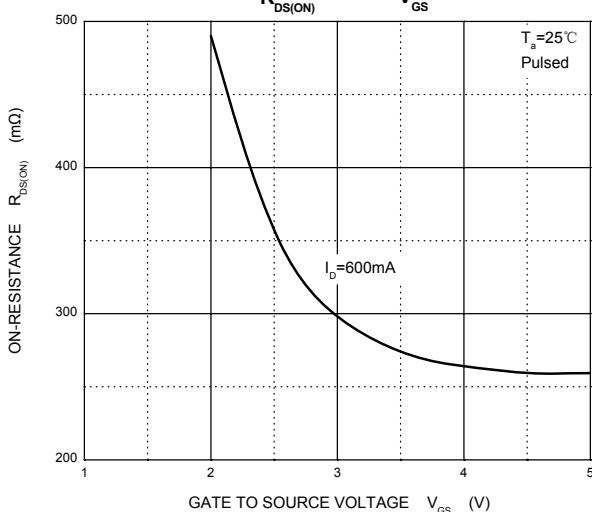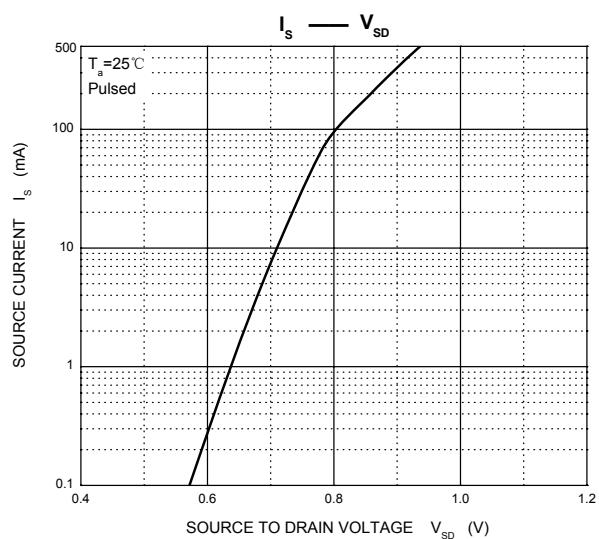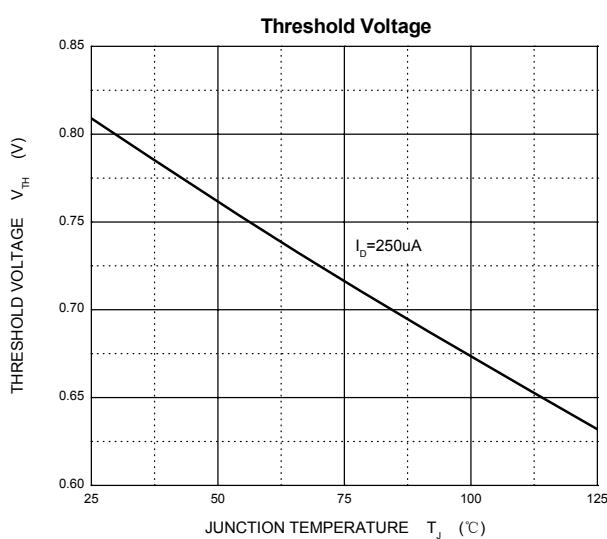
SOT-523 Package Outline Dimensions
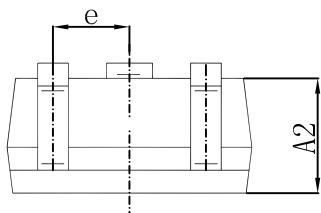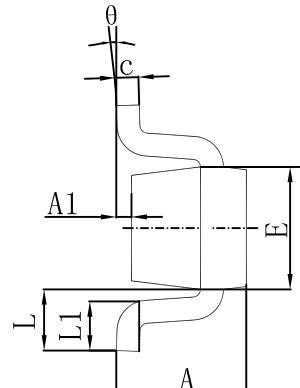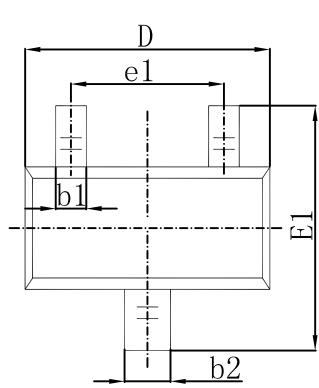
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

SOT-523 Suggested Pad Layout
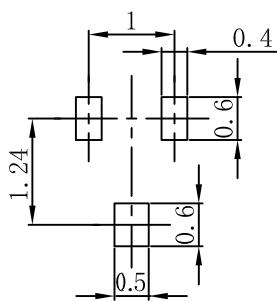
Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.

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