LIXI

Leading Circuit Protection Products and Solutions

FEATURE

- High density cell design for extremely low $R_{DS(on)}$

- Rugged and Reliable

N-Channel 50-V(D-S) MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$MAX	I_D
50V	3.5Ω@10V	220mA
	6Ω@4.5V	

APPLICATION

- Direct Logic-Level Interface: TTL/CMOS

- Drivers: Relays, Solenoids, Lamps, Hammers,

  Display, Memories, Transistors, etc.

- Battery Operated Systems
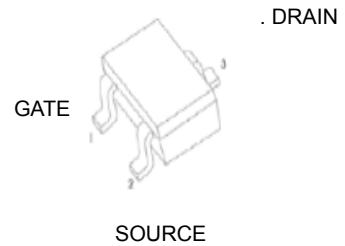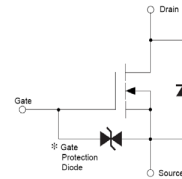
- Solid-State Relays

Package

SOT-523

MARKING

- MARKING:SS

Maximum ratings (Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	50	V
Continuous Gate-Source Voltage	V_{GSS}	±20	
Continuous Drain Current	I_D	0.22	A
Power Dissipation	P_D	0.30	W
Thermal Resistance from Junction to Ambient	$R_{θJA}$	357	℃/W
Operating Temperature	T_j	150	℃
Storage Temperature	T_{stg}	-55 ~+150	

MOSFET ELECTRICAL CHARACTERISTICS
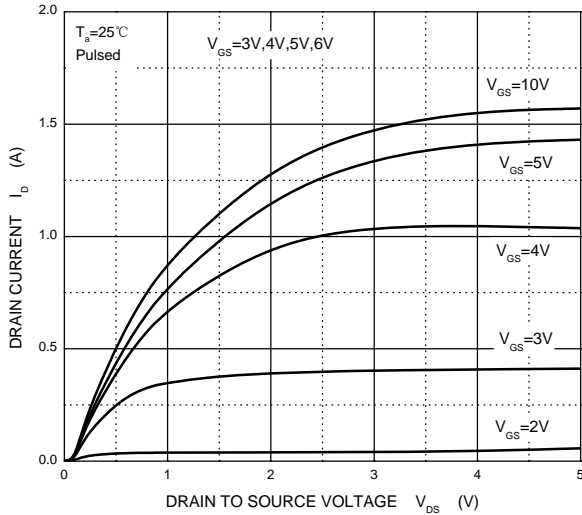
Ta=25 ℃ unless otherwise specified

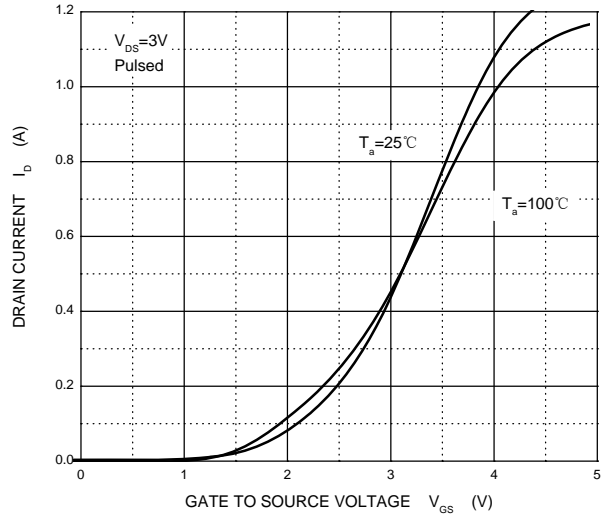| Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Off characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250µA	50			V
Gate-body leakage	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±10	uA
Zero gate voltage drain current	I_{DSS}	V_{DS} =50V, V_{GS} =0V			0.5	µA
		V_{DS} =30V, V_{GS} =0V			100	nA
On characteristics						
Gate-threshold voltage (note 1)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =0.25mA	0.80		1.50	V
Static drain-source on-resistance (note 1)	$R_{DS(on)}$	V_{GS} =10V, I_D =0.22A			3.50	Ω
		V_{GS} =4.5V, I_D =0.22A			6	
Forward transconductance (note 1)	g_{FS}	V_{DS} =10V, I_D =0.22A	0.12			S
Dynamic characteristics (note 2)						
Input capacitance	C_{iss}	V_{DS} =25V,V_{GS} =0V, f=1MHz		27		pF
Output capacitance	C_{oss}			13		
Reverse transfer capacitance	C_{rss}			6		
Switching characteristics						
Turn-on delay time (note 1,2)	$t_{d(on)}$	V_{DD}=30V, V_{DS}=10V, I_D =0.29A,R_{GEN}=6Ω			5	ns
Rise time (note 1,2)	t_r				18	
Turn-off delay time (note 1,2)	$t_{d(off)}$				36	
Fall time (note 1,2)	t_f				14	
Drain-source body diode characteristics						
Body diode forward voltage (note 1)	V_{SD}	I_S=0.44A, V_{GS} = 0V			1.4	V

Notes:

1. Pulse Test ; Pulse Width ≤300µs, Duty Cycle ≤2%.

2. These parameters have no way to verify.

Typical Characteristics

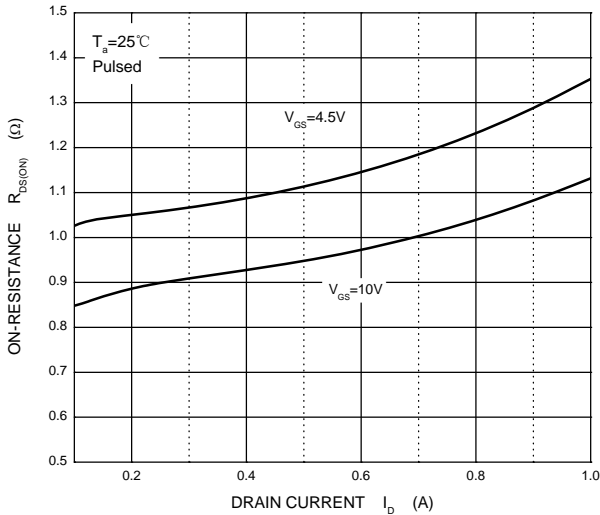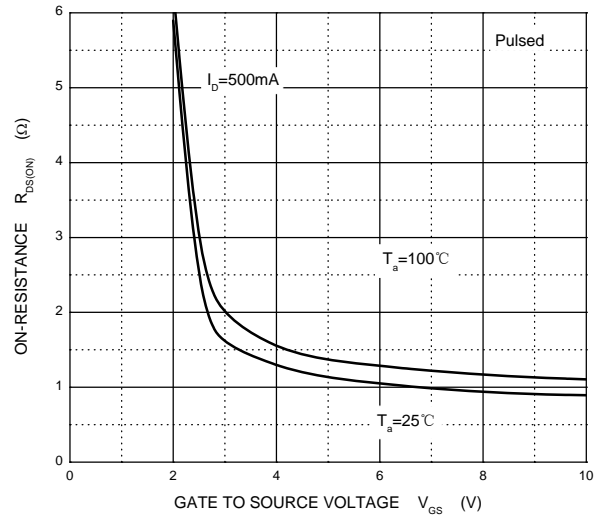### Output Characteristics

$T_a=25℃$
Pulsed
$V_{GS}=3V,4V,5V,6V$

$V_{GS}=10V$

$V_{GS}=5V$

$V_{GS}=4V$

$V_{GS}=3V$

$V_{GS}=2V$

DRAIN CURRENT I_D (A)

DRAIN TO SOURCE VOLTAGE V_{DS} (V)

Transfer Characteristics

$V_{DS}=3V$
Pulsed

$T_a=25℃$

$T_a=100℃$

DRAIN CURRENT I_D (A)

GATE TO SOURCE VOLTAGE V_{GS} (V)

$R_{DS(ON)}$ —— I_D

$T_a=25℃$
Pulsed

$V_{GS}=4.5V$

$V_{GS}=10V$

ON-RESISTANCE $R_{DS(ON)}$ (Ω)

DRAIN CURRENT I_D (A)

$R_{DS(ON)}$ —— V_{GS}

Pulsed

$I_D=500mA$

$T_a=100℃$

$T_a=25℃$

ON-RESISTANCE $R_{DS(ON)}$ (Ω)

GATE TO SOURCE VOLTAGE V_{GS} (V)

I_S —— V_{SD}

Pulsed

$T_a=100℃$

$T_a=25℃$

SOURCE CURRENT I_S (A)

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
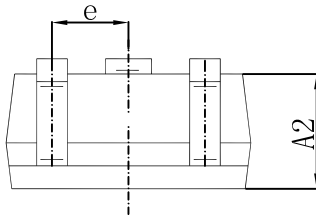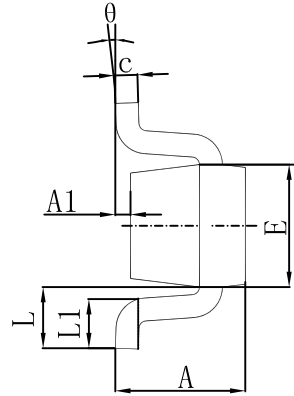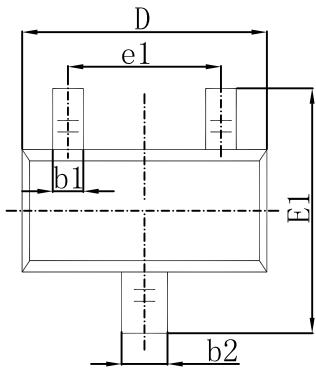
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	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
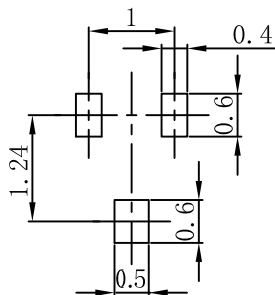
Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.

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