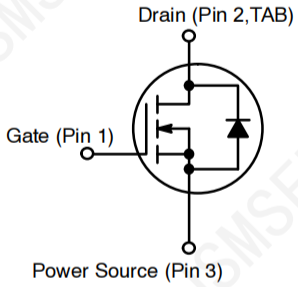
FEATURES

1)ESD Protected
2)Low RDS(on)
3)Surface Mount Package
4)This is a Pb−Free Device
5)We declare that the material of product compliant with RoHS requirements and Halogen Free.
6) S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

SOT−23



APPLICATIONS

1)Low Side Load Switch
2)Level Shift Circuits
3)DC−DC Converter
4)Portable Applications i.e. DSC, PDA, Cell Phone, etc.

MAXIMUM RATINGS(Tj= 25℃ unless otherwise stated))

Rating	Symbol	Value	Unit
Drain−to−Source Voltage	V_{DSS}	60	Vdc
Gate−to−Source Voltage	V_{GS}	±20	Vdc
Drain Current – Steady State T_A = 25°C T_A = 85° C – t < 5 s T_A = 25°C T_A = 85° C	I_D	320 230 380 270	mAdc
Power Dissipation (Note 1) Steady State t < 5 s	P_D	300 420	mW
Pulsed Drain Current (tp = 10 μs)	I_{DM}	1.5	A
Operating Junction and Storage Temperature Range	T_J, T_{STG}	−55 to+150	°C
Source Current (Body Diode)	I_S	300	mA
Lead Temperature for Soldering Purposes (1/8 " from case for 10s)	T_L	260	°C
Gate−Source ESD Rating(HBM, Method 3015)	ESD	2000	V

Stresses exceeding Maximum Ratings may damage the device.
Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.
1. Surface−mounted on FR4 board using 1 in sq pad size (Cu area = 1.127 in sq [1 oz] including traces)

THERMAL CHARACTERISTICS

Characteristic	Max	Value	Unit
Junction−to−Ambient − Steady	$R_{\theta JA}$	417	℃/W
Junction−to−Ambient − t ≤5 s	$R_{\theta JA}$	300	

ELECTRICAL CHARACTERISTICS (Ta= 25℃)

Characteristic	Symbol	Test Condition		Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS							
Drain−to−Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 250 μA		60			V
Drain−to−Source Breakdown Voltage Temperature Coefficient	$V_{(BR)DSS}/T_J$				71		mV/°C
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS} = 0 V, V_{DS} = 60 V	T_J = 25°C			1	μA
			T_J = 125°C			500	
		V_{GS} = 0 V, V_{DS} = 50 V	T_J = 25°C			100	nA
Gate−to−Source Leakage Current	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V				±10	μA
ON CHARACTERISTICS (Note 2.)							
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_D = 250 μA		1		2.5	V
Negative Threshold Temperature Coefficient	$V_{GS(TH)/TJ}$				4		mV/°C
Drain−to−Source On Resistance	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 500 mA				2.3	Ω
		V_{GS} = 5.0 V, I_D = 50 mA				2.7	
Forward Transconductance	G_{fs}	V_{DS} = 5 V, I_D = 200 mA		80			mS
CHARGES AND CAPACITANCES							
Input Capacitance	C_{ISS}	V_{GS} = 0 V, f = 1 MHz, V_{DS} = 25 V			34		pF
Output Capacitance	C_{OSS}				3		
Reverse Transfer Capacitance	C_{RSS}				2.2		
Total Gate Charge	$Q_{G(TOT)}$	V_{GS} = 4.5 V, V_{DS} = 10 V; I_D = 500 mA			0.71		nC
Threshold Gate Charge	$Q_{G(TH)}$				0.1		
Gate−to−Source Charge	Q_{GS}				0.32		
Gate−to−Drain Charge	Q_{GD}				0.16		
SWITCHING CHARACTERISTICS (VGS = V (Note 3)							
Turn−On Delay Time	$t_{d(ON)}$	V_{DS} = 10 V, V_{GEN} = 10 V, I_D = 500 mA			3.8		ns
Rise Time	tr				3.4		
Turn−Off Delay Time	$t_{d(OFF)}$				19		
Fall Time	t_f				12		
DRAIN−SOURCE DIODE CHARACTERISTICS							
Forward Diode Voltage	V_{SD}	V_{GS} = 0 V, I_S = 115	T_J = 25°C			1.4	V
			T_J = 85°C		0.7		

2. Pulse Test: pulse width ≤ 300 s, duty cycle ≤ 2%
3. Switching characteristics are independent of operating junction temperatures

ELECTRICAL CHARACTERISTIC CURVES

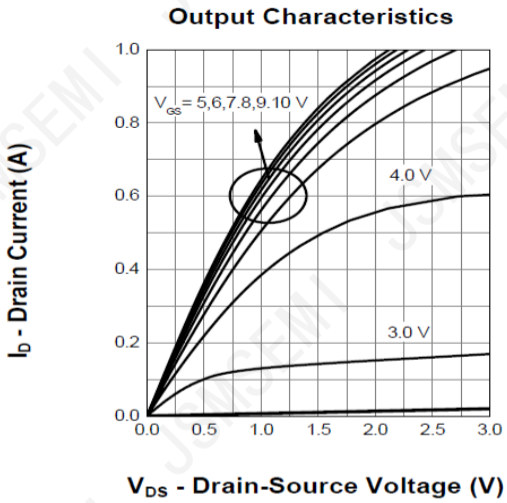


Fig. 1

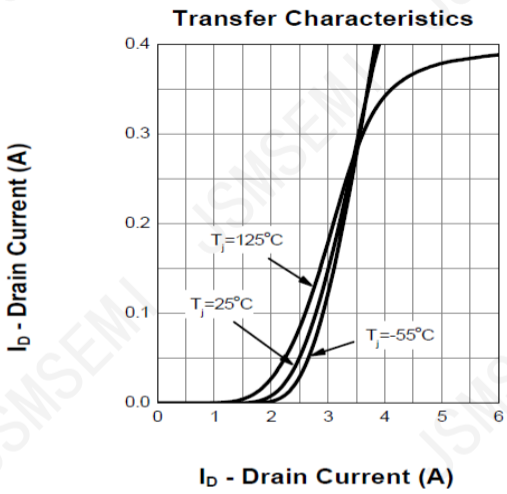


Fig. 2

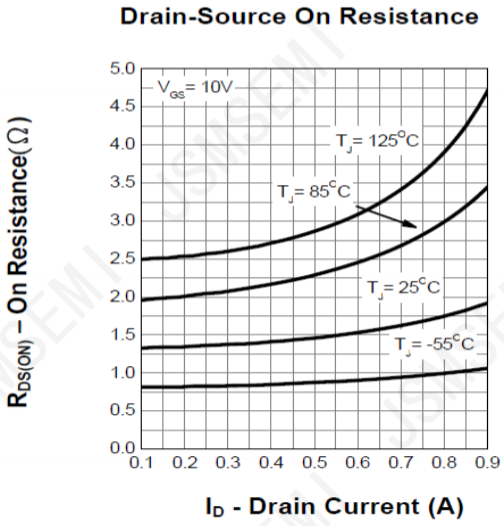


Fig. 3

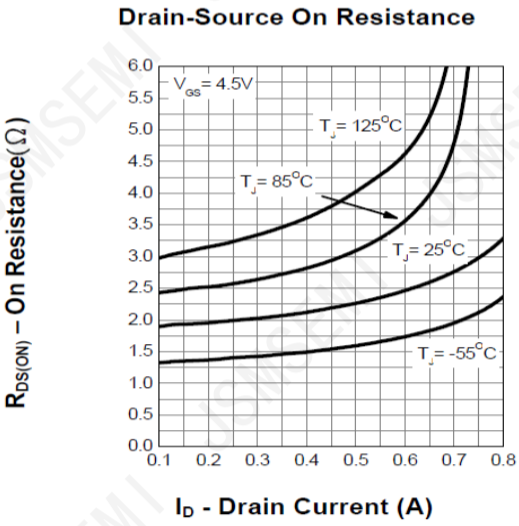


Fig. 4

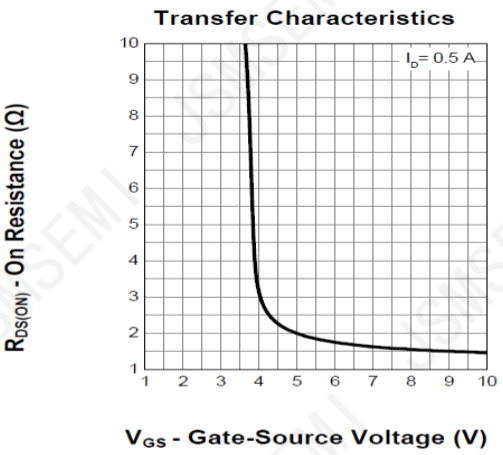
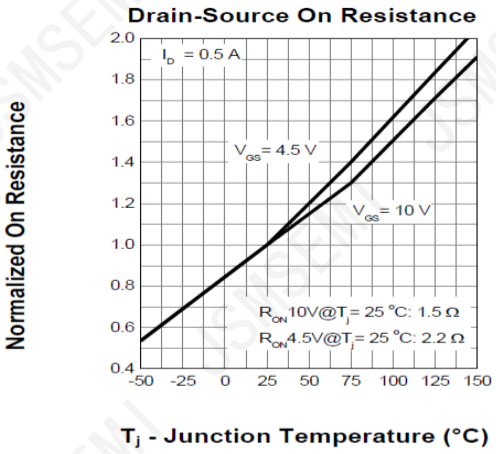


Fig. 5



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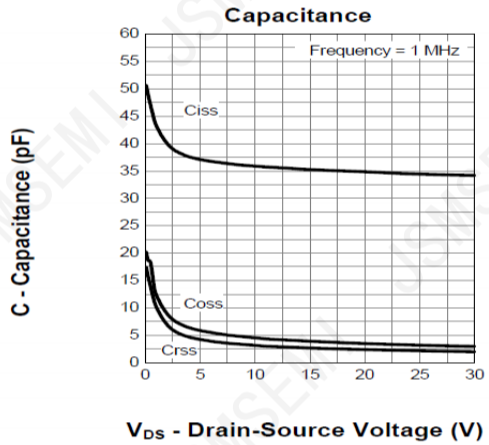


Fig. 7

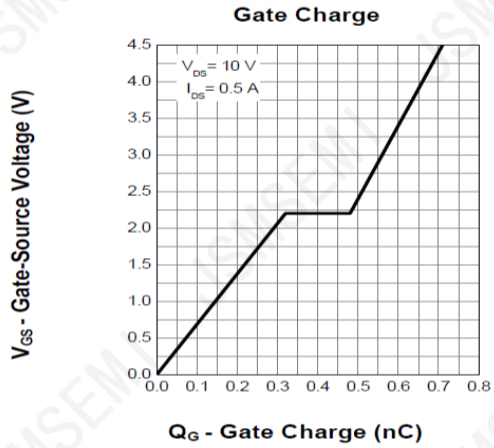


Fig. 8

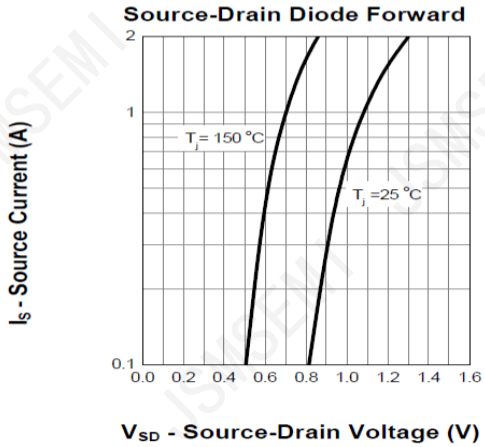
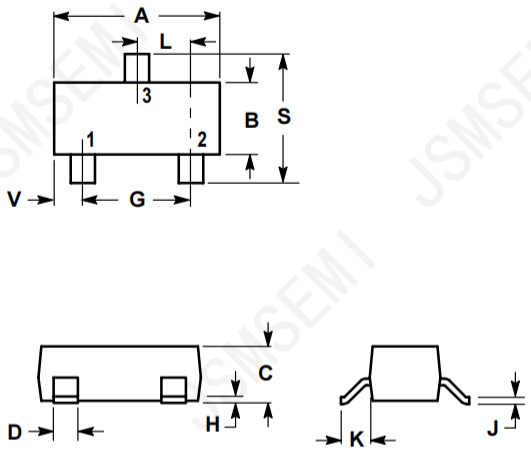


Fig. 9

SOT–23

Dimension Outline:

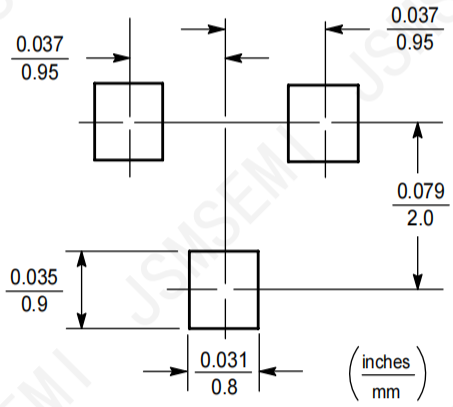


NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M,1982
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

Soldering Footprint:



Revision History

Rev.	Change	Date
V1.0	Initial version	2/23/2024

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