GR2302

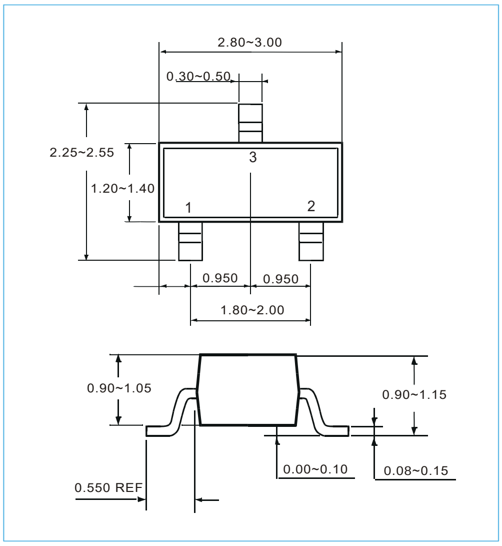
N-CHANNEL MOSFET

VOLTAGE 20 Volt **CURRENT** 4 Ampere

FEATURES

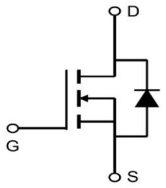
- N-Channel Enhancement Mode Field Effect Transistor
- High dense cell design for extremely low Rds(on)
- Exceptional on-resistance and maximum DC current capability
- Lead free in compliance with EU RoHS

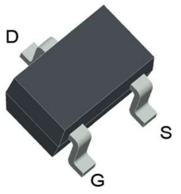
SOT-23 Unit:mm



MECHANICAL DATA

- Case Material: Molded Plastic.
- UL Flammability Classification Rating 94V-0





MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS T_A 25 C

SYMBOL	PARAMETER		VALUE	UNIT
V_{DS}	Drain-Source Voltage		20	V
V_{GS}	Gate-Source Voltage		±12	V
I_D	Continuous Drain Current	T_C = 25℃	4	A
		T_C = 100℃	2.5	A
I_{DM}	Drain Current-Pulsed		10	A
P_D	Power Dissipation	T_C = 25℃	1	W
$R_{θJA}$	Thermal Resistance from Junction to Ambient		125	°C/W
T_J, T_{STG}	Operating and Storage Temperature Range		-50 to +150	°C

GR2302

ELECTRICAL CHARACTERISTICS T_A 25 C

PARAMETER	SYMBOL	Test conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0 V, I_D=250 μA	20	22		V
Zero gate voltage drain current	I_{DSS}	V_{DS} =24V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±12V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	0.5	0.85	1.2	V
Drain-source on-resistance (note 1)	$R_{DS(on)}$	V_{GS} =4.5V, I_D =2.9A		30	45	mΩ
		V_{GS} =2.5V, I_D =2.5A		37	59	mΩ
Forward tranconductance (note 2)	g_{fs}	V_{DS} =5V, I_D =2.9A		8		S
Input Capacitance	C_{iss}	V_{DS} =10V,V_{GS} =0V,f =1MHz		300		pF
Output Capacitance	C_{oss}			120		
Reverse Transfer Capacitance	C_{rss}			80		
Total Gate Charge	Q_g	V_{DS} =10V, I_D =2.9A, V_{GS} =4.5V		4.0	10	nC
Gate-Source Charge	Q_{gs}			0.65		
Gate-Drain(“Miller”) Charge	Q_{gd}			1.2		
Turn-on delay time	$t_{d(on)}$	V_{DD}=10V, I_D =2.9A, R_{GEN}=6Ω, V_{GS} =4.5V		10	15	ns
Turn-on rise time	t_r			50	85	ns
Turn-off delay time	$t_{d(off)}$			17	45	ns
Turn-off fall time	t_f			10	20	ns
Maximum Continuous Drain to Source Diode Forward Current	I_S				4	A
Maximum Pulsed Drain to Source Diode Forward Current	I_{SM}				10	A
Drain to Source Diode Forward Voltage	V_{SD}	V_{GS} =0V, I_S=2.9A		0.75	1.2	V

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

GR2302

Typical Characteristics

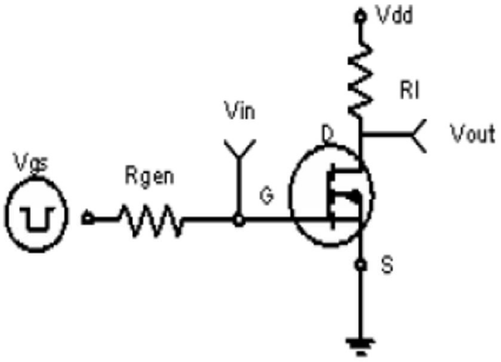


Figure1 :Switching Test Circuit

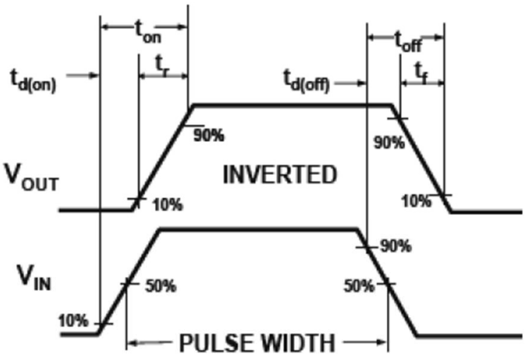
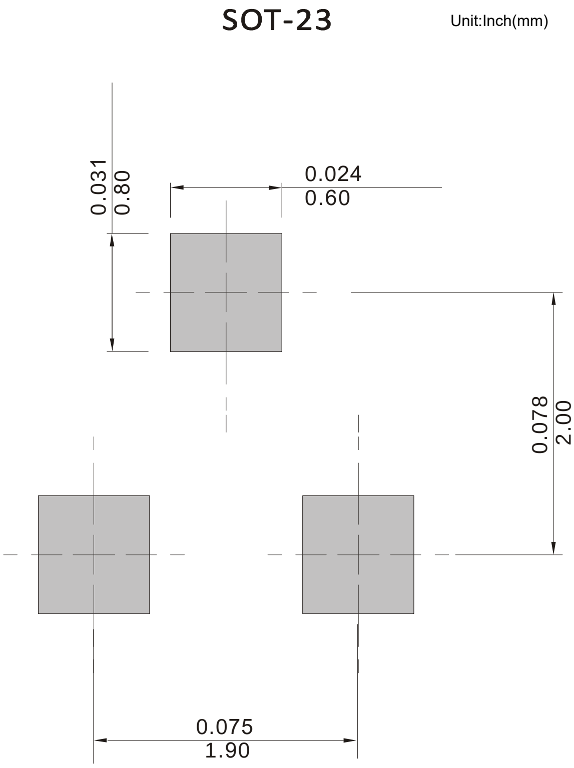


Figure2:Switching Waveforms

GR2302

MOUNTING PAD LAYOUT



ORDER INFORMATION

- Packing information

Part Number	**Case**	Reel Size	QUANTITY
GR2302	SOT-23	7 Inch	3000