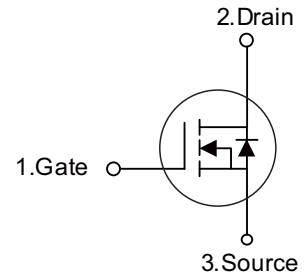


N-Channel Enhancement Mode Field Effect Transistor

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
20V	55mΩ@4.5V	3A
	85mΩ@2.5V	

Symbol

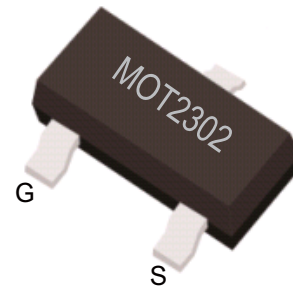


FEATURE

- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

APPLICATION

- Battery protection
- Load switch
- Power management



ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT2302	SOT-23	3000pieces/Real

Table 1. Absolute Maximum Ratings ($T_A=25^\circ\text{C}$)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage ($V_{GS}=0V$)	20	V
V_{GS}	Gate-Source Voltage ($V_{DS}=0V$)	± 12	V
I_D	Drain Current-Continuous	3	A
P_D	Maximum Power Dissipation	1	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	$^\circ\text{C}$

Table 2. Thermal Characteristic

Symbol	Parameter	Value	Unit
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	125	$^\circ\text{C/W}$



Electrical Characteristics (T_A=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V I _D =250μA	20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V,V _{GS} =0V			1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±12V,V _{DS} =0V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D =250μA	0.5	0.7	1.2	V
g _{FS}	Forward Transconductance	V _{DS} =5V,I _D =3 A		6.5		S
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =4.5V, I _D =3 A		45	55	mΩ
		V _{GS} =2.5V, I _D =2.0A		62	85	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =10V,V _{GS} =0V, f=1.0MHz		482		pF
C _{oss}	Output Capacitance			87		pF
C _{rss}	Reverse Transfer Capacitance			59		pF
Switching Times						
t _{d(on)}	Turn-on Delay Time	V _{DD} =10V,I _D =3A,R _L =2.8Ω V _{GS} =4.5V,R _G =6Ω		12		nS
t _r	Turn-on Rise Time			54		nS
t _{d(off)}	Turn-Off Delay Time			19		nS
t _f	Turn-Off Fall Time			12		nS
Q _g	Total Gate Charge	V _{DS} =10V,I _D =3 A, V _{GS} =4.5V		4.1		nC
Q _{gs}	Gate-Source Charge			0.8		nC
Q _{gd}	Gate-Drain Charge			1.5		nC
Source-Drain Diode Characteristics						
I _{SD}	Source-Drain Current(Body Diode)				3	A
V _{SD}	Forward on Voltage ^(Note 1)	V _{GS} =0V,I _S = 3 A		0.75	1.2	V

Notes 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

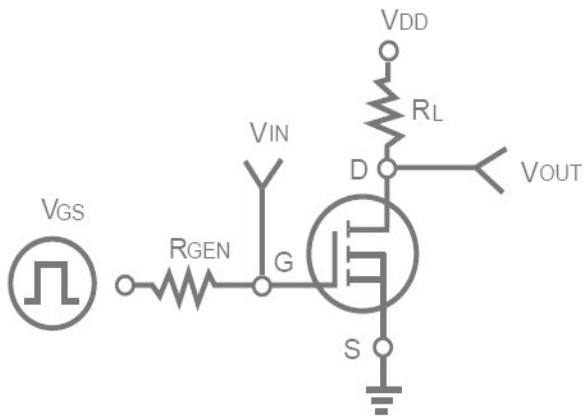


Figure1:Switching Test Circuit

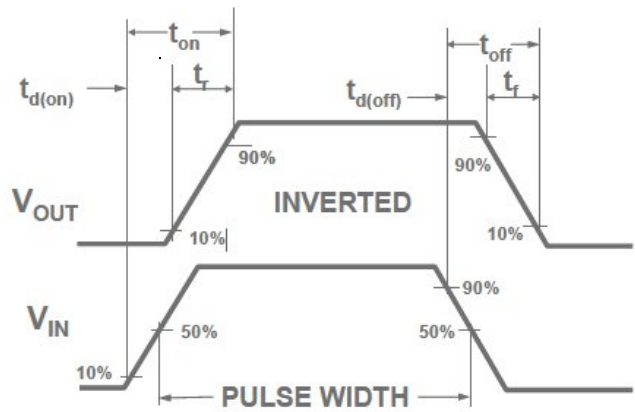


Figure2:Switching Waveforms

■ SOT-23 PACKAGE OUTLINE DIMENSIONS

