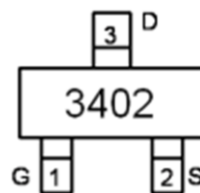


Main Product Characteristics:

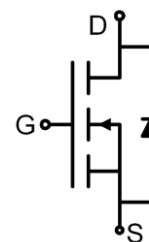
V_{DSS}	30V
$R_{DS(on)}$	45mΩ(typ.)
I_D	5A



SOT-23



Marking and Pin Assignments



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Special designed for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 150°C operating temperature



Description:

It utilizes the latest processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications.

Absolute Max Rating:

Symbol	Parameter	Max.	Units
$I_D @ T_C = 25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}$ ①	5	A
I_{DM}	Pulsed Drain Current②	20	
$P_D @ T_C = 25^\circ\text{C}$	Power Dissipation③	1.38	W
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-to-Source Voltage	± 20	V
$T_J \quad T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	°C

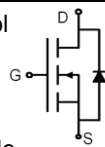
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-Ambient ^④	—	90	$^{\circ}\text{C}/\text{W}$

Electrical Characterizes @ $T_A=25^{\circ}\text{C}$ unless otherwise specified

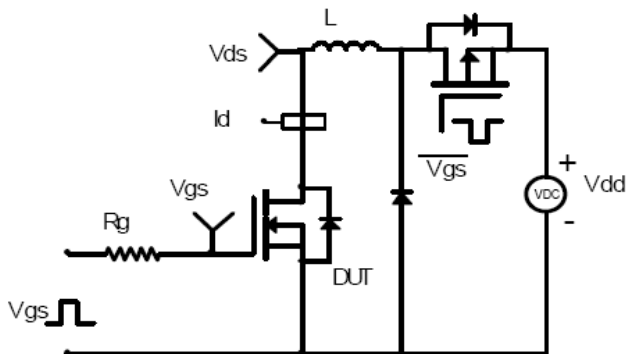
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	30	—	—	V	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	45	48	m Ω	$V_{GS}=4.5\text{V}, I_D=4\text{A}$
		—	26	30	m Ω	$V_{GS}=10\text{V}, I_D=5\text{A}$
$V_{GS(th)}$	Gate threshold voltage	1	—	2.5	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	$V_{DS}=30\text{V}, V_{GS}=0\text{V}$
I_{GSS}	Gate-Body Leakage Current	—	—	± 100	nA	$V_{GS}=\pm 20\text{V}, V_{DS}=0\text{V}$
Q_g	Total gate charge	—	8.5	—	nC	$V_{DS}=16\text{V}, I_D=5\text{A}, V_{GS}=4.5\text{V}$
Q_{gs}	Gate-to-Source charge	—	1.5	—		
Q_{gd}	Gate-to-Drain("Miller") charge	—	3.2	—		
$t_{d(on)}$	Turn-on delay time	—	6	—	ns	$V_{DS}=15\text{V}, I_D=5\text{A}, V_{GS}=10\text{V}, R_{GEN}=3.3\Omega, R_L=3\Omega$
t_r	Rise time	—	20	—		
$t_{d(off)}$	Turn-Off delay time	—	20	—		
t_f	Fall time	—	3	—		
C_{iss}	Input capacitance	—	660	—	pF	$V_{DS}=25\text{V}, V_{GS}=0\text{V}, f=1.0\text{MHz}$
C_{oss}	Output capacitance	—	90	—		
C_{riss}	Reverse transfer capacitance	—	70	—		

Source-Drain Ratings and Characteristics

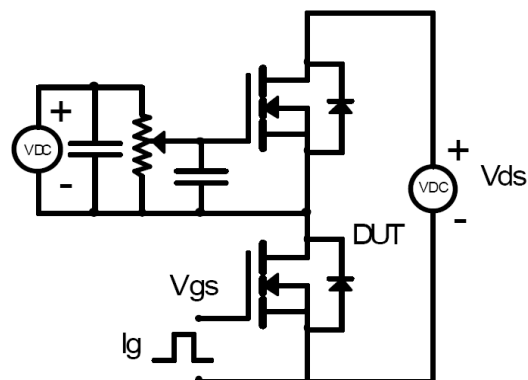
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	5	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	20	A	
V_{SD}	Diode Forward Voltage	—	—	1.2	V	$V_{GS}=0\text{V}, I_S=1.2\text{A}$

Test Circuits and Waveforms

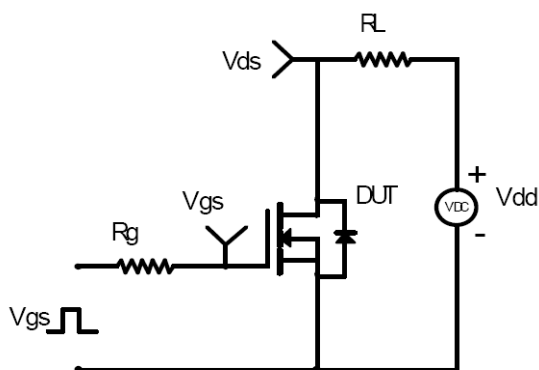
EAS Test Circuit:



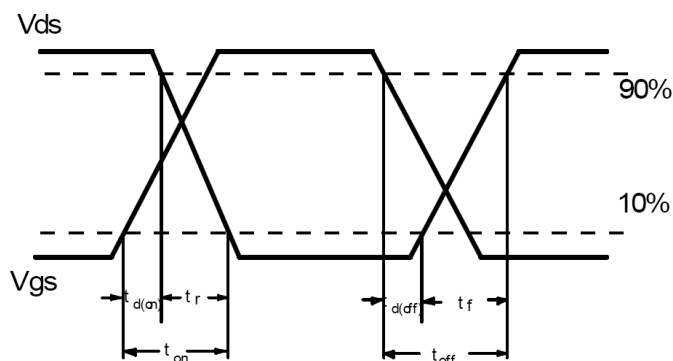
Gate Charge Test Circuit:



Switching Time Test Circuit:



Switching Waveforms:



Notes:

- ① Calculated continuous current based on maximum allowable junction temperature.
- ② Repetitive rating; pulse width limited by max. junction temperature.
- ③ The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.
- ④ The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ C$

Typical Electrical and Thermal Characteristics

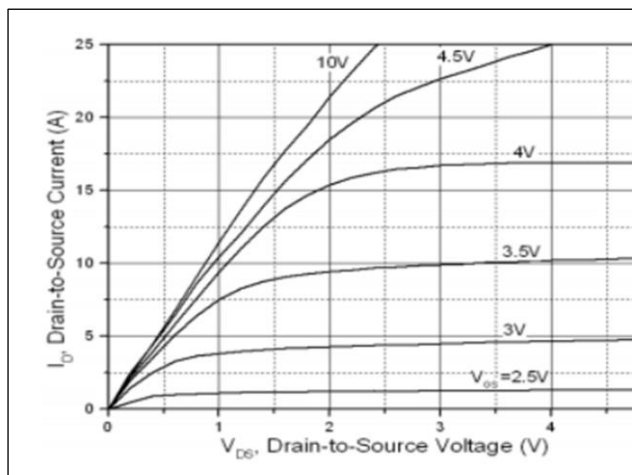


Figure1. Typical Output Characteristics

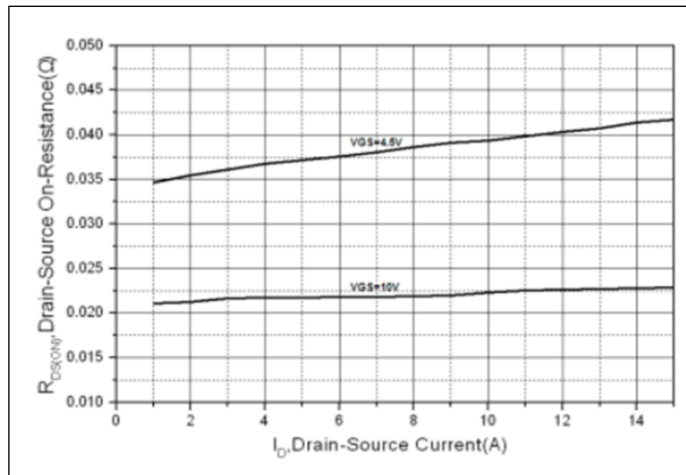


Figure2. Typical On-Resistance vs. Drain Current and Gate Voltage

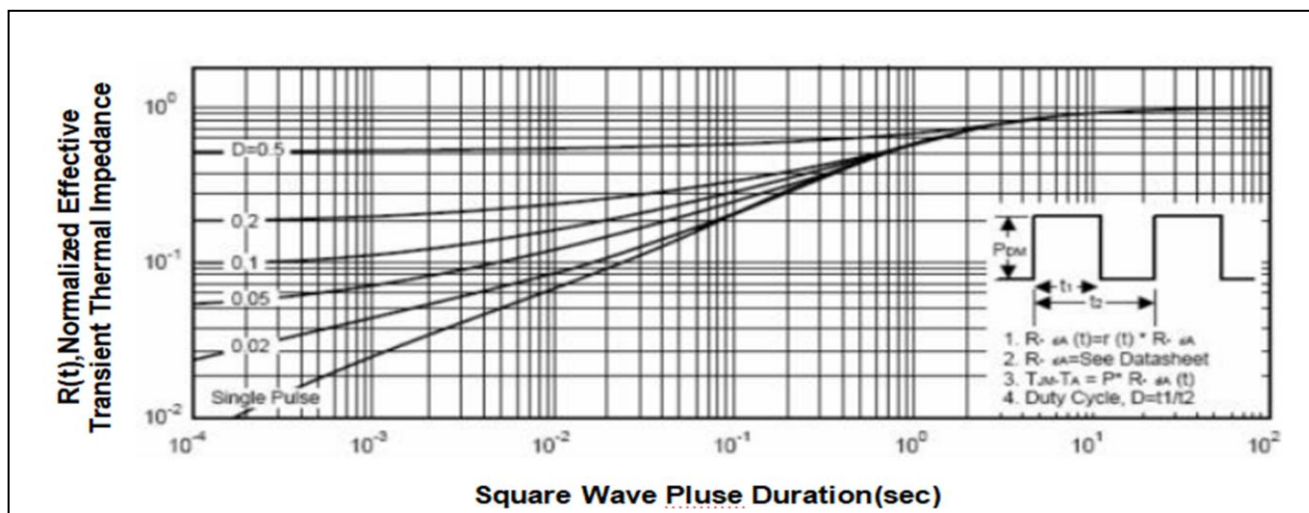
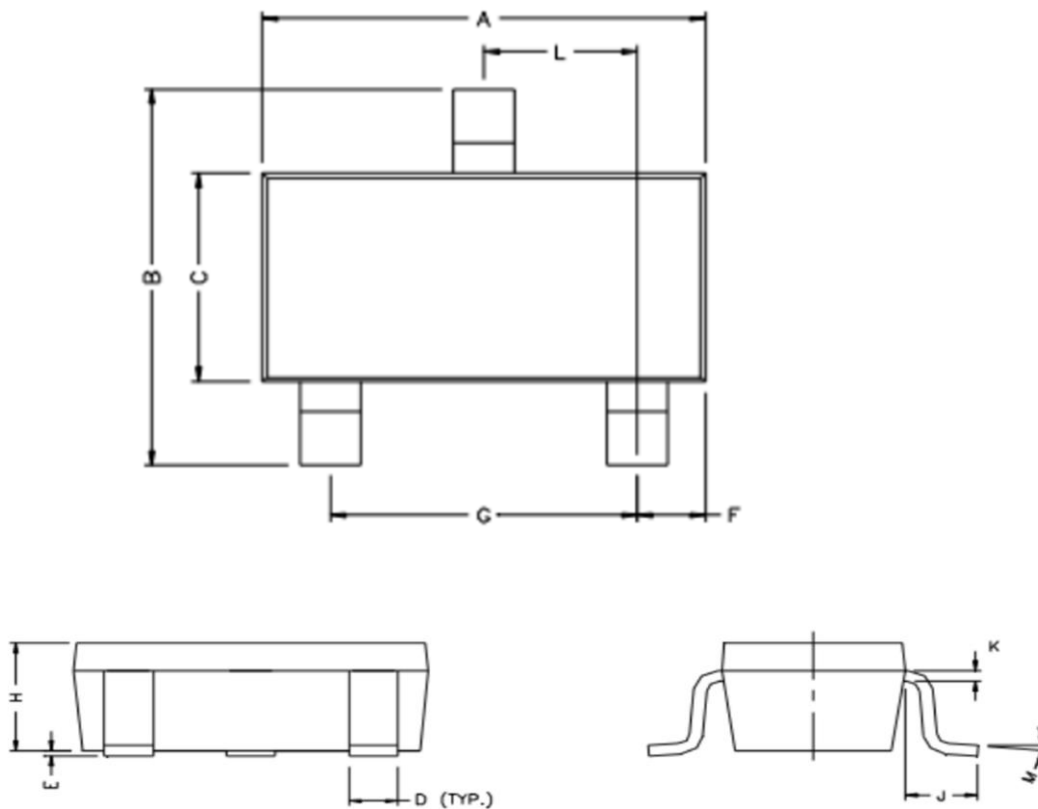


Figure3. Normalized Maximum Transient Thermal Impedance

Mechanical Data:

SOT-23 Package Outline(Unit:mm)



REF.	Millimeter		REF.	Millimete	
	Min.	Max.		Min.	Max.
A	2.80	3.00	G	1.80	2.00
B	2.30	2.50	H	0.90	1.1
C	1.20	1.40	K	0.10	0.20
D	0.30	0.50	J	0.35	0.70
E	0	0.10	L	0.92	0.98
F	0.45	0.55	M	0°	10°

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