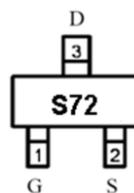
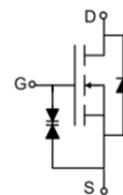


**Main Product Characteristics:**

$V_{DSS}$	60V
$R_{DS(on)}$	3Ω (Max)
$I_D$	0.3A


**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 trench 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
$I_D$ @ TC = 25°C	Continuous Drain Current, $V_{GS}$ @ 10V <sup>①</sup>	0.3	A
$I_{DM}$	Pulsed Drain Current <sup>②</sup>	0.8	
$P_D$ @TC = 25°C	Power Dissipation <sup>③</sup>	0.43	W
$V_{DS}$	Drain-Source Voltage	60	V
$V_{GS}$	Gate-to-Source Voltage	± 20	V
$T_J$ $T_{STG}$	Operating Junction and Storage Temperature Range	-55 to + 150	°C

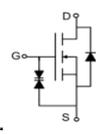
**Thermal Resistance**

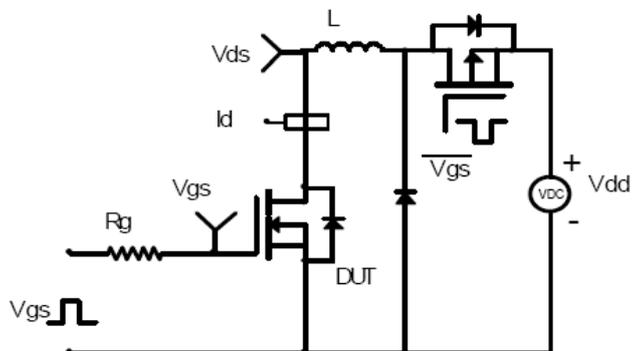
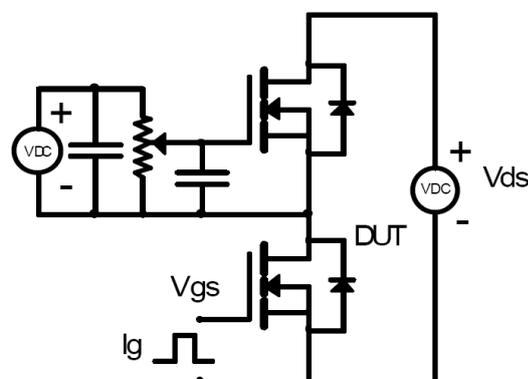
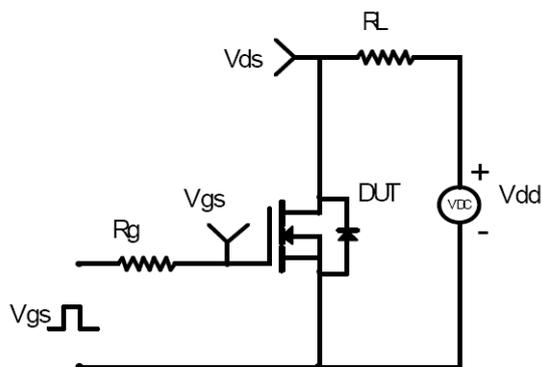
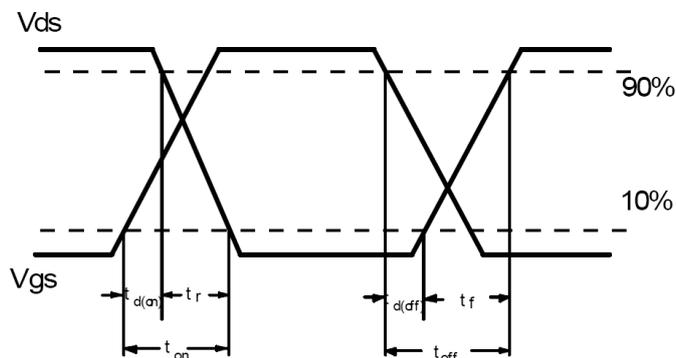
Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient <sup>④</sup>	—	350	°C/W

**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	60	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	—	3.5	$\Omega$	$V_{GS}=5V, I_D = 0.05A$
		—	—	3	$\Omega$	$V_{GS}=10V, I_D=0.5A$
$V_{GS(th)}$	Gate threshold voltage	1	—	2.5	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
$I_{DSS}$	Drain-to-Source leakage current	—	—	1	$\mu A$	$V_{DS}=60V, V_{GS}=0V$
$I_{GSS}$	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS}=\pm 5V, V_{DS}=0V$
		—	—	150	nA	$V_{GS}=\pm 10V, V_{DS}=0V$
		—	—	10	$\mu A$	$V_{GS}=\pm 20V, V_{DS}=0V$
$Q_g$	Gate-to-Source charge	—	0.4	—	nC	$V_{DS}=10V, I_D=0.25A,$ $V_{GS}=4.5V$
$t_{d(on)}$	Turn-on delay time	—	25	—	nS	$V_{DD}=30V, V_{GS}=10V, I_D=0.2A$ $R_{GEN}=10\Omega, R_L=150\Omega$
$t_{d(off)}$	Turn-Off delay time	—	35	—		
$C_{iss}$	Input capacitance	—	30	—	pF	$V_{DS}=25V, V_{GS}=0V,$ $f=1.0MHz$
$C_{oss}$	Output capacitance	—	6	—		
$C_{rss}$	Reverse transfer capacitance	—	3	—		

**Source-Drain Ratings and Characteristics**

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$I_S$	Continuous Source Current (Body Diode) ①	—	—	0.3	A	MOSFET symbol showing the integral reverse p-n junction diode. 
$I_{SM}$	Pulsed Source Current (Body Diode)	—	—	0.8	A	
$V_{SD}$	Diode Forward Voltage	—	0.85	1.3	V	$I_S=0.2A, V_{GS}=0V, T_J= 25^{\circ}\text{C}$

**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  $T_A = 25\text{ }^\circ\text{C}$

Typical Electrical and Thermal Characteristics

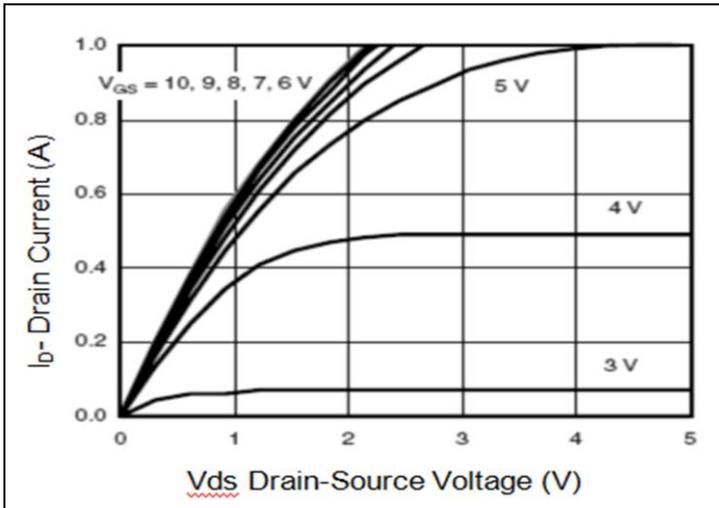


Figure1. Typical Output Characteristics

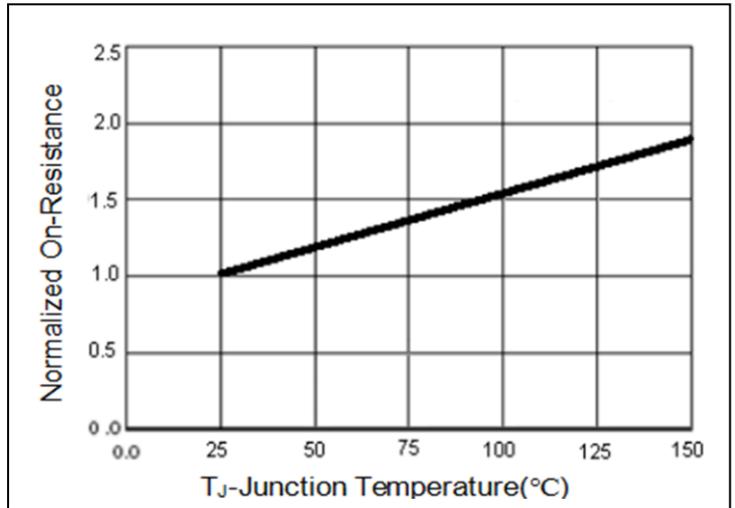


Figure2. Drain-Source On-Resistance Voltage

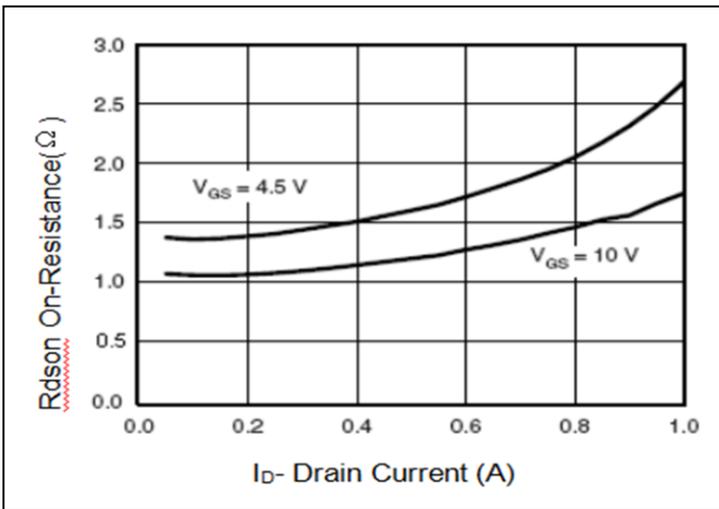


Figure3. Drain-Source On-Resistance

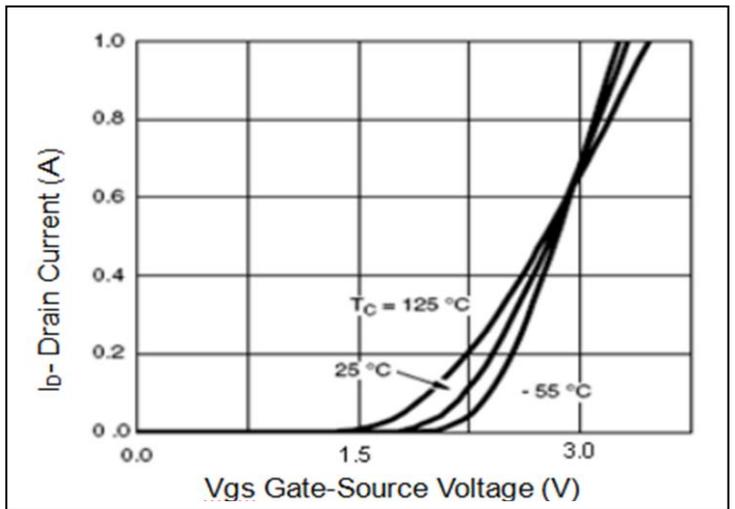


Figure4. Transfer Characteristics

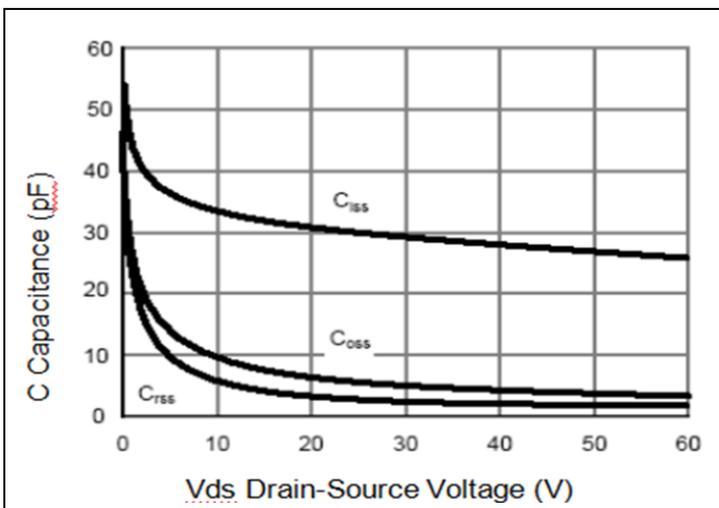


Figure5. Capacitance

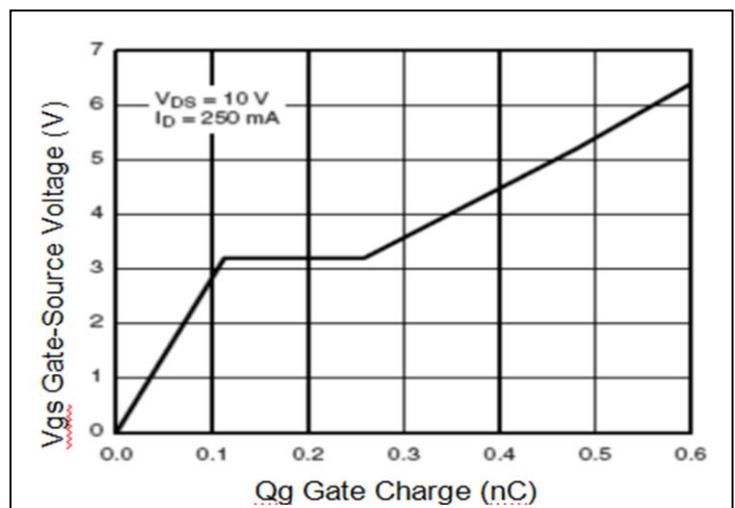


Figure6. Gate Charge

Typical Electrical and Thermal Characteristics

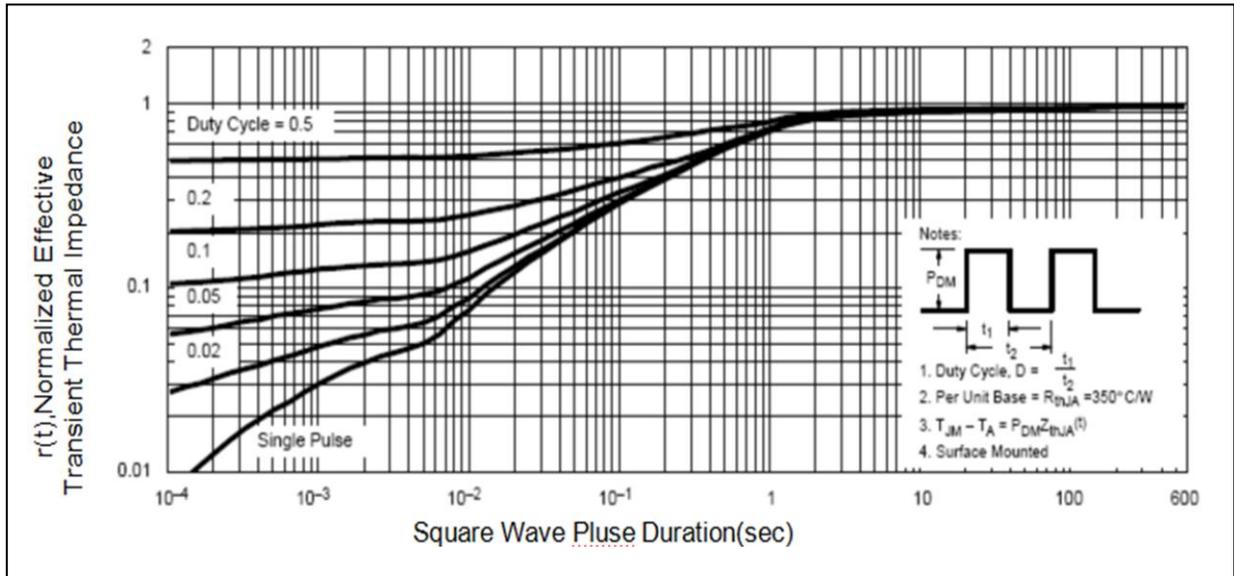


Figure7. Typical Effective Transient Thermal Impedance, Junction-to-Ambient

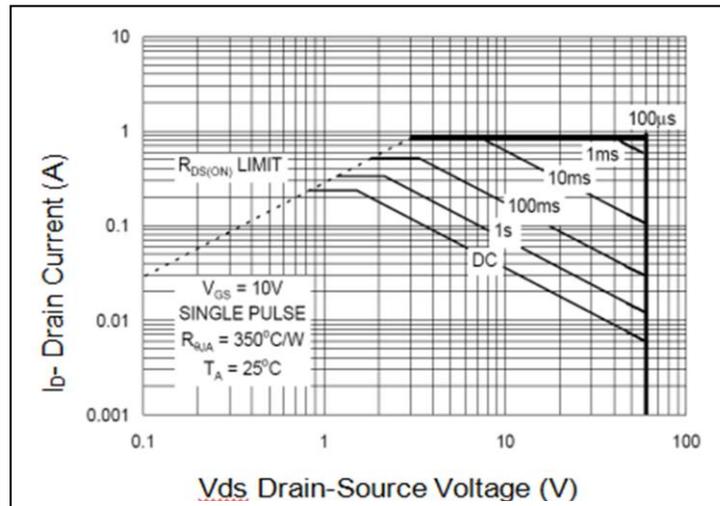
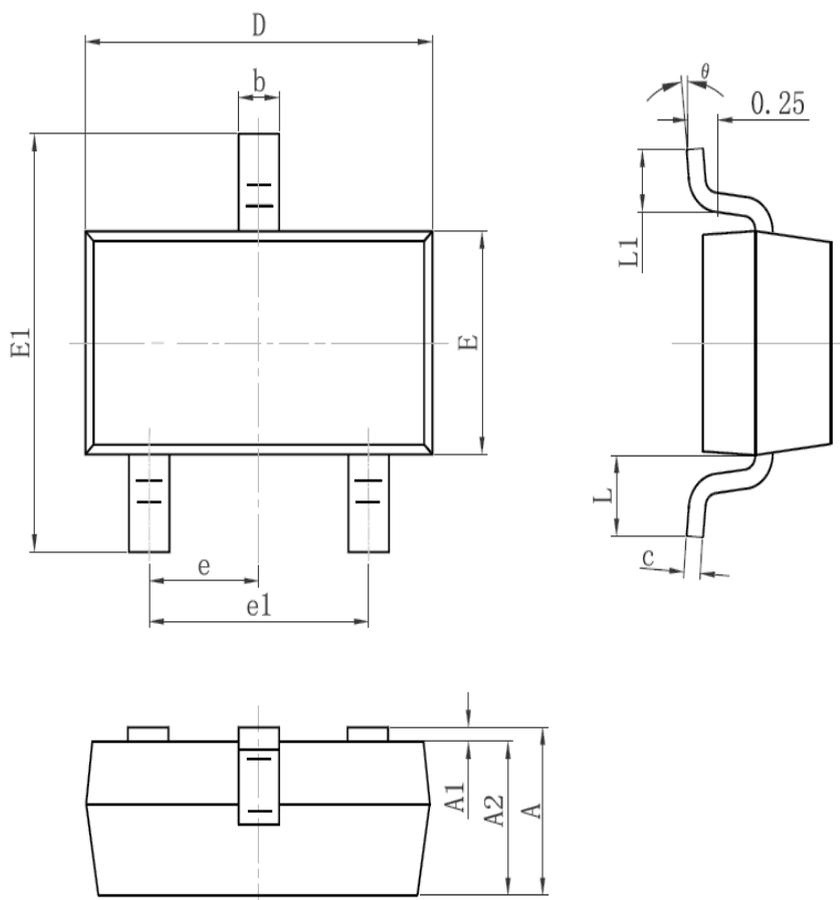


Figure8. Safe Operation Area

**Mechanical Data:**
**SOT-23 PACKAGE OUTLINE DIMENSION**


Symbol	Dimension In Millimeters		Dimension In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.95TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.55REF		0.022REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

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