

N-Channel 60V (D-S) Power MOSFET

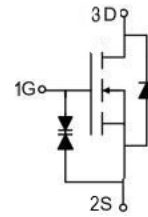
Features

- 100% Avalanche Tested
- Halogen Free, Pb-Free
- RoHS Compliant



Applications

- Relay driver
- Switching circuits
- High-side load switch
- High-speed line driver



Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain Source Voltage	V_{DS}	60	V
Gate Source Voltage	V_{GS}	± 20	V
Drain Current, Continuous $V_{GS}=10\text{V}$	I_D	0.3	A
Drain Current, Pulsed (Note 1)	I_{DM}	0.8	A
Power Dissipation	P_D	0.36	W
Operating Junction/Storage Temperature Range	T_J/T_{STG}	-55 to +150	$^\circ\text{C}$

Note 1: Single pulse; $t_p \leq 1\mu\text{s}$.

Thermal Characteristics

Parameter	Symbol	Max	Unit
Thermal Resistance Junction to Ambient (Note 2)	R_{thJA}	350	$^\circ\text{C/W}$

Note 2: Device mounted on 1 square inch FR4 PCB board, with 2oz single-sided copper, in a 25°C still air environment.

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$	--	--	1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	1	--	2.5	V
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 10V, V_{DS}=0V$	--	--	± 150	nA
Drain Source On-state Resistance (Note 3)	$R_{DS(on)}$	$V_{GS}=5V, I_D=0.05A$	--	--	3.5	Ω
		$V_{GS}=10V, I_D=0.5A$	--	--	3	
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DD}=30V, R_L=150\Omega, R_G=10\Omega$	--	--	25	ns
Turn-off Delay Time	$t_{d(off)}$		--	--	35	
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=25V, f=1MHz$	--	30	--	pF
Output Capacitance	C_{oss}		--	6	--	
Reverse Transfer Capacitance	C_{rss}		--	3	--	

Reverse Diode Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Forward Current, Continuous	I_{SD}	$T_A = 25^\circ\text{C}$	--	--	0.3	A
Diode Forward Voltage (Note 3)	V_{SD}	$I_F=0.2A, V_{GS}=0V$	--	--	1.3	V

Note 3: Pulse test; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Typical Characteristics Curves ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig. 1 - Output Characteristics

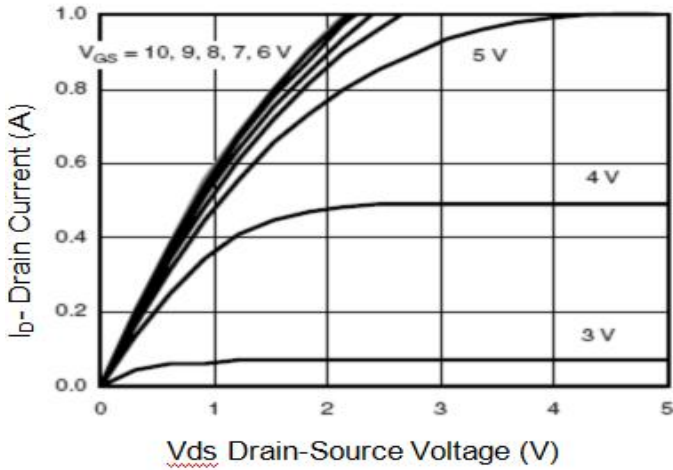


Fig. 2 - Transfer Characteristics

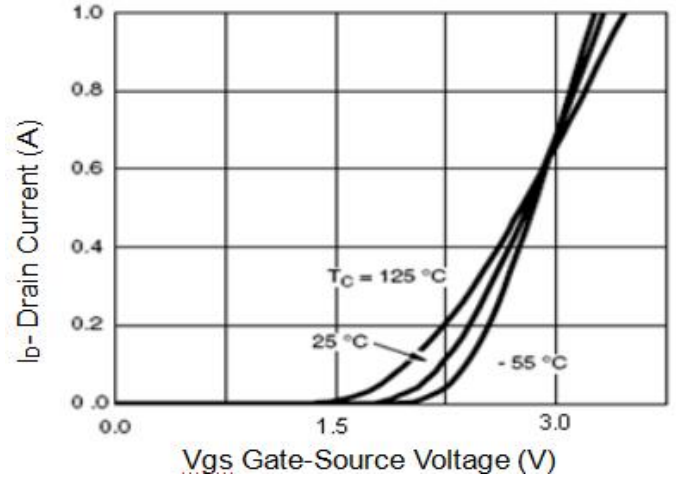


Fig. 3 - Drain-Source On-Resistance

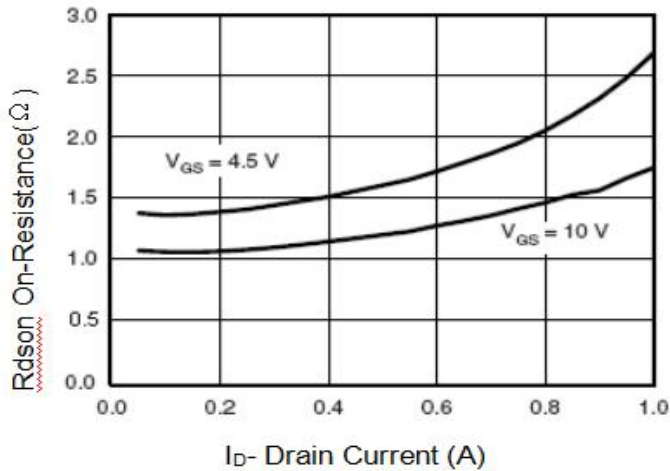


Fig. 4 - Normalized On-Resistance

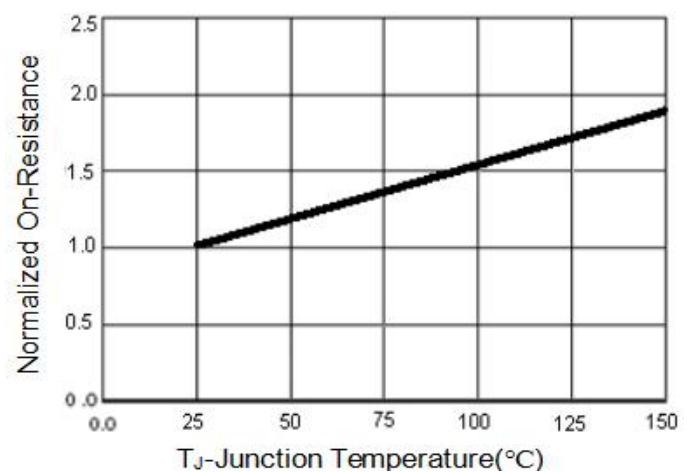


Fig. 5 - Capacitance

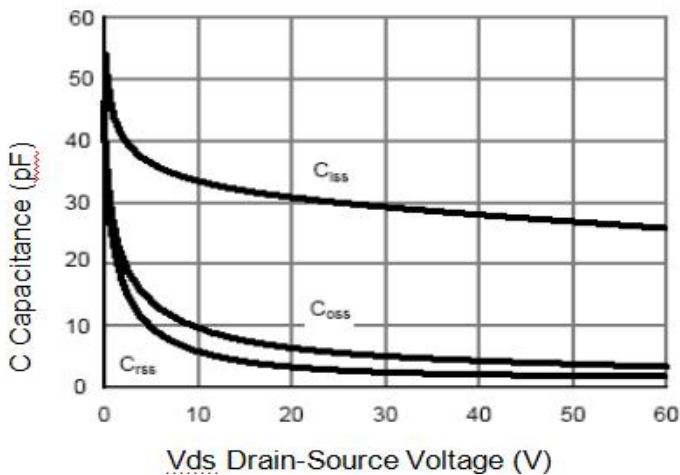
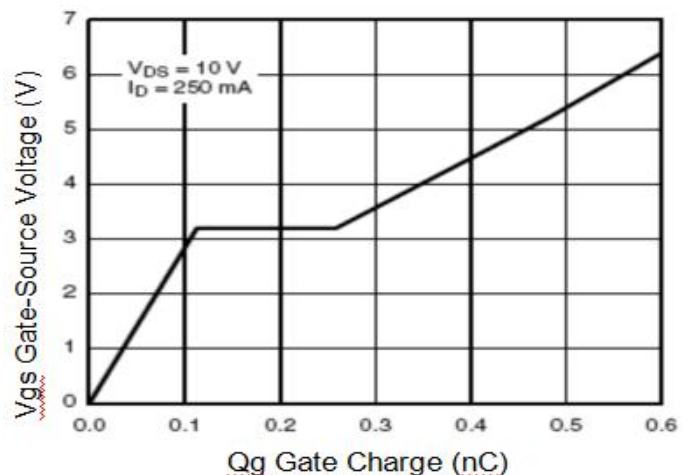


Fig. 6 - Gate Charge



Typical Characteristics Curves (T_A = 25°C unless otherwise noted)

Fig.7 - Maximum Transient Thermal Impedance, Junction-Ambient

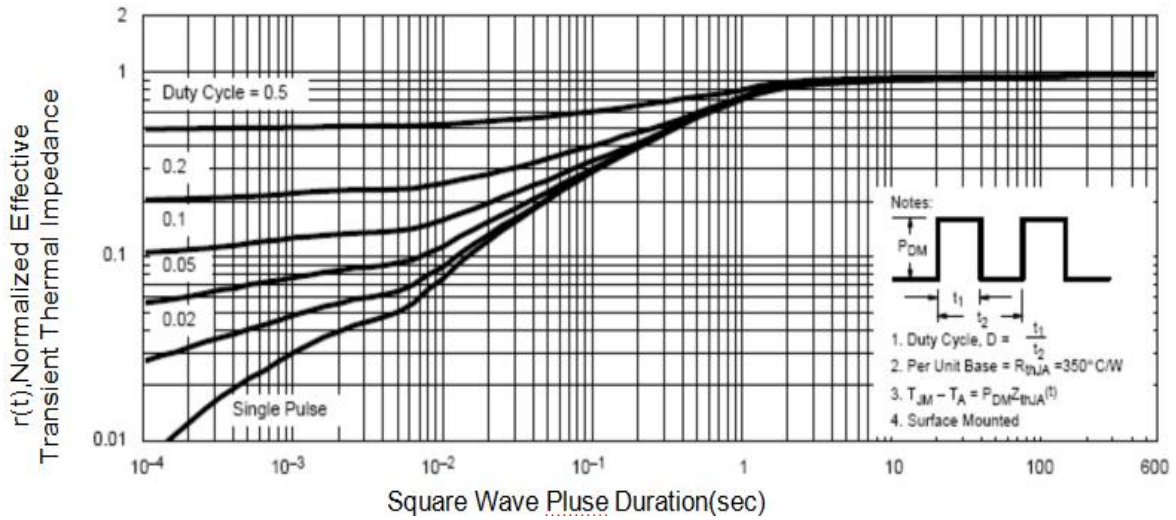
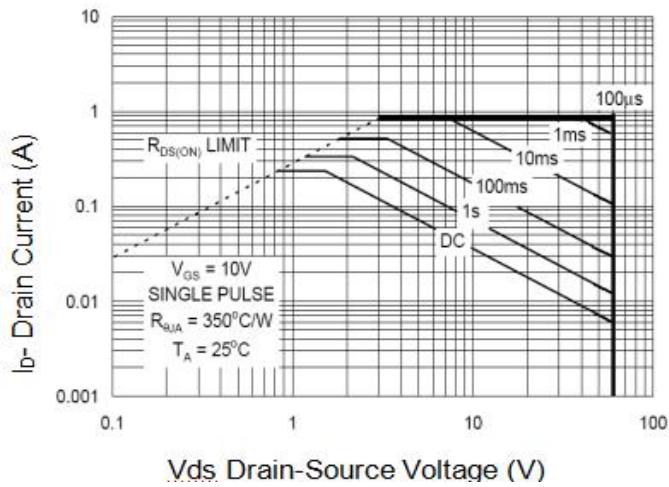
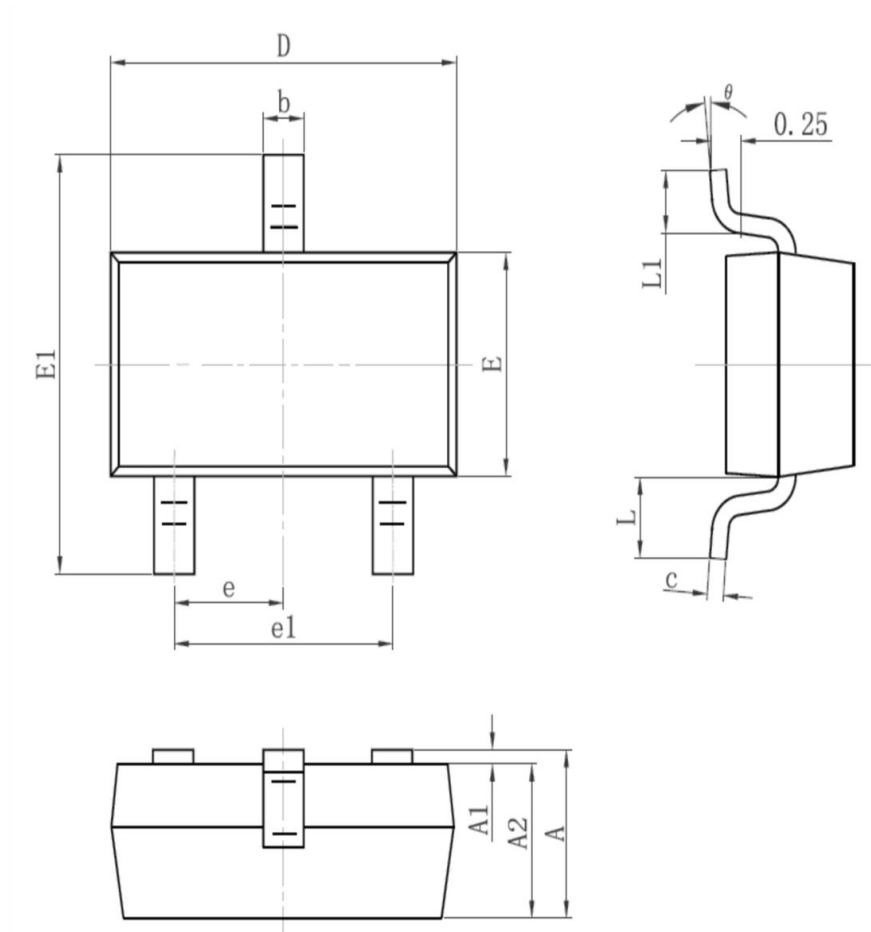


Fig. 8 - Safe Operating Area



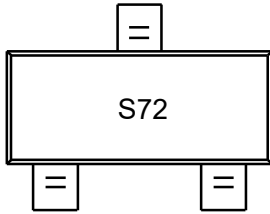
Package Outline Dimensions (Unit: millimeters)

SOT-23



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°

Marking Outline



Part Name: GMN2N7002K

1. P/N Mark: S72

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