

N-Channel MOSFET

Features

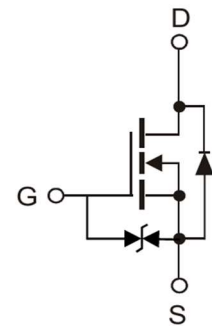
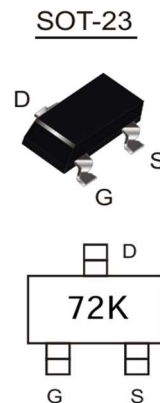
- Trench Power MV MOSFET Technology
- Voltage Controlled Small Signal Switch
- Low Input Capacitance
- Halogen-Free & Lead-Free
- ESD Protected up to 2.5KV (HBM)

Product Summary			
V_{DS}	$R_{DS(on)}$ (Ω) Typ	I_D (mA)	Q_g (Typ)
60V	1.3 @ 10V	300	1.7nc
	1.4 @ 4.5V	200	

Application

- Load Switch for Portable Devices
- Solid-state relays
- Direct logic-level interface: TTL/CMOS

Marking information



N-channel MOSFET

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage ($T_A=25^\circ\text{C}$)	V_{GS}	± 20	V
Continuous drain current ($T_A=25^\circ\text{C}$)	I_D	0.34	A
Continuous drain current ($T_A=70^\circ\text{C}$)	I_D	0.272	A
Peak Drain Current, Pulsed ¹⁾	I_{DM}	1.5	A
Power Dissipation	P_D	0.35	W
Operating Junction	T_J	-55~150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55~150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient ²⁾	$R_{\theta JA}$	104	$^\circ\text{C/W}$

Characteristics at Ta = 25°C unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit
STATIC PARAMETERS					
Drain-Source Breakdown Voltage at $V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	60			V
Drain-Source Leakage Current at $V_{DS}=60V, V_{GS}=0V$	I_{DSS}			1	μA
Gate Leakage Current at $V_{GS}=\pm 5V, V_{DS}=0V$	I_{GSS}			± 0.1	μA
Gate-Source Threshold Voltage at $V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1	1.4	2.5	V
Drain-Source On-State Resistance at $V_{GS}=10V, I_D=300mA$ at $V_{GS}=4.5V, I_D=200mA$	$R_{DS(on)}$		1.3 1.4	2.5 3	Ω
DYNAMIC PARAMETERS					
Input Capacitance at $V_{DS}=30V, V_{GS}=0V, f=1MHz$	C_{iss}		18		pF
Output Capacitance at $V_{DS}=30V, V_{GS}=0V, f=1MHz$	C_{oss}		12		pF
Reverse Transfer Capacitance at $V_{DS}=30V, V_{GS}=0V, f=1MHz$	C_{rss}		7		pF
Gate charge total at $V_{DS}=30V, I_D=0.3A, V_{GS}=10V$	Q_g		1.7	2.4	nC
Turn-On Delay Time at $V_{DD}=30V, I_D=0.3A, R_{GEN}=6\Omega, V_{GS}=10V$	$t_{d(on)}$		5		nS
Turn-Off Delay Time at $V_{DD}=30V, I_D=0.3A, R_{GEN}=6\Omega, V_{GS}=10V$	$t_{d(off)}$		17		nS
Body-Diode PARAMETERS					
Drain-Source Diode Forward Voltage at $I_S=0.3A, V_{GS}=0V$	V_{SD}			1.2	V
Maximum Body-Diode Continuous Current	I_S			340	mA
Body Diode Reverse Recovery Time at $V_R=25V, V_{GS}=0V$ $I_S=0.3A, di/dt=100A/\mu s$	trr		30		nS

Note:

- 1) Pulse Test: Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$.
- 2) Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Electrical Characteristics Curves

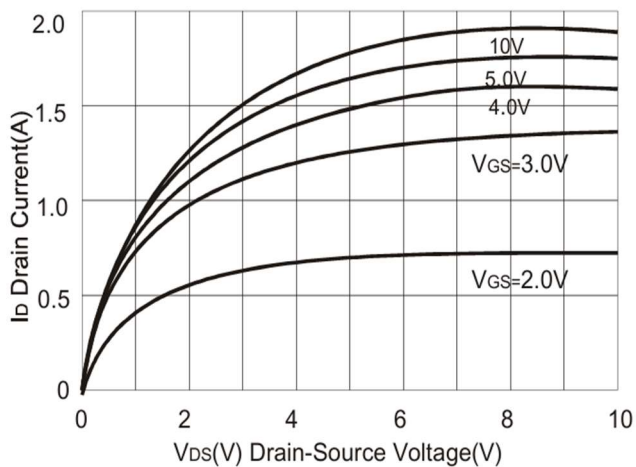


Fig1. Output Characteristics

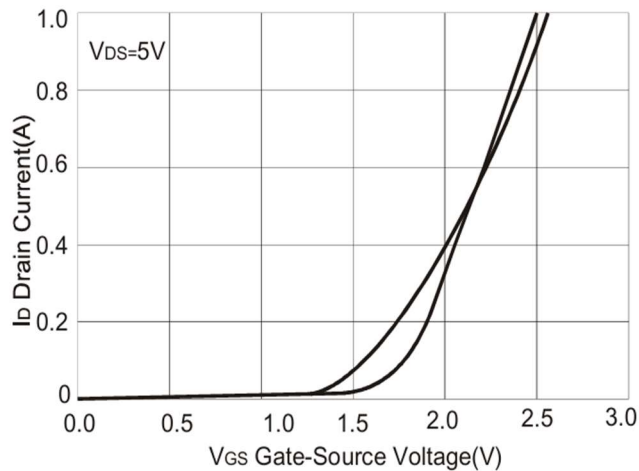


Fig2. Transfer Characteristics

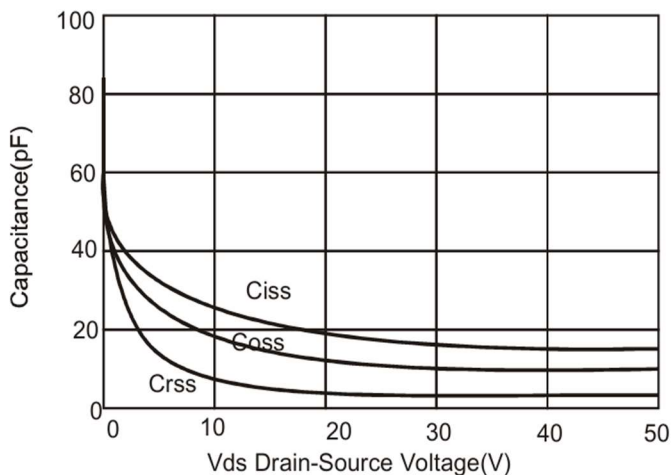


Fig3. Capacitance Characteristics

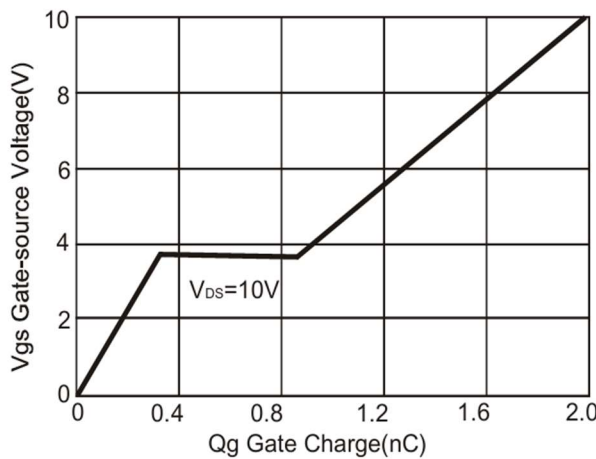


Fig4. Gate Charge

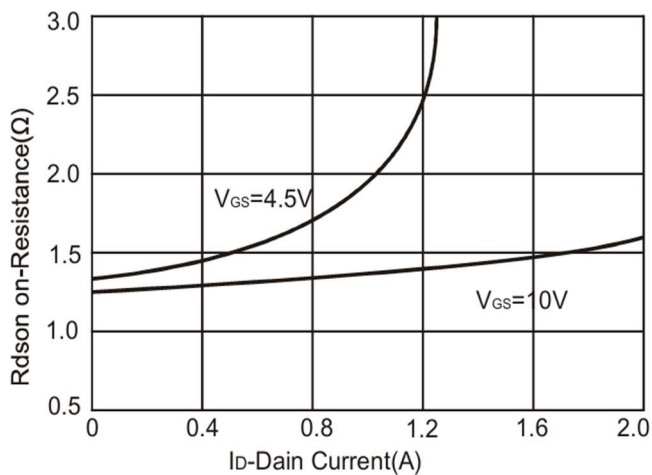


Fig5. Drain-Source on Resistance

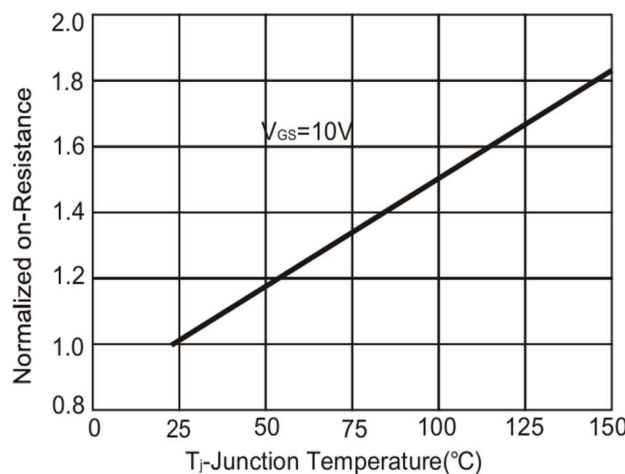


Fig6. Drain-Source on Resistance

Electrical Characteristics Curves

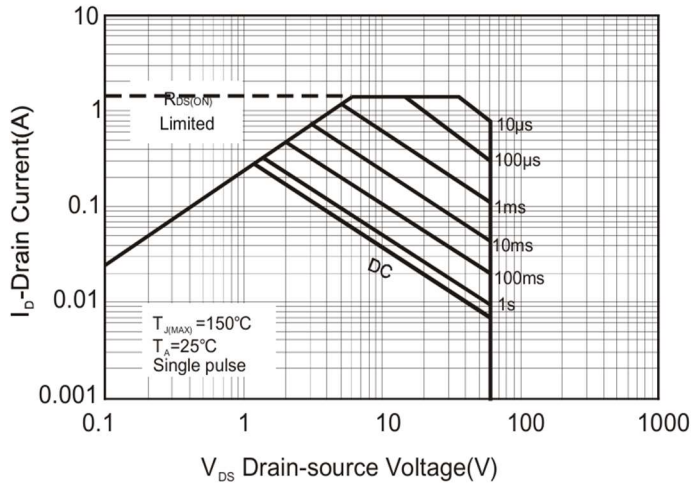


Fig7. Safe Operation Area

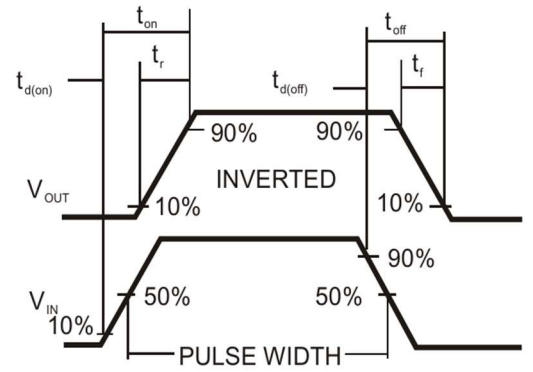
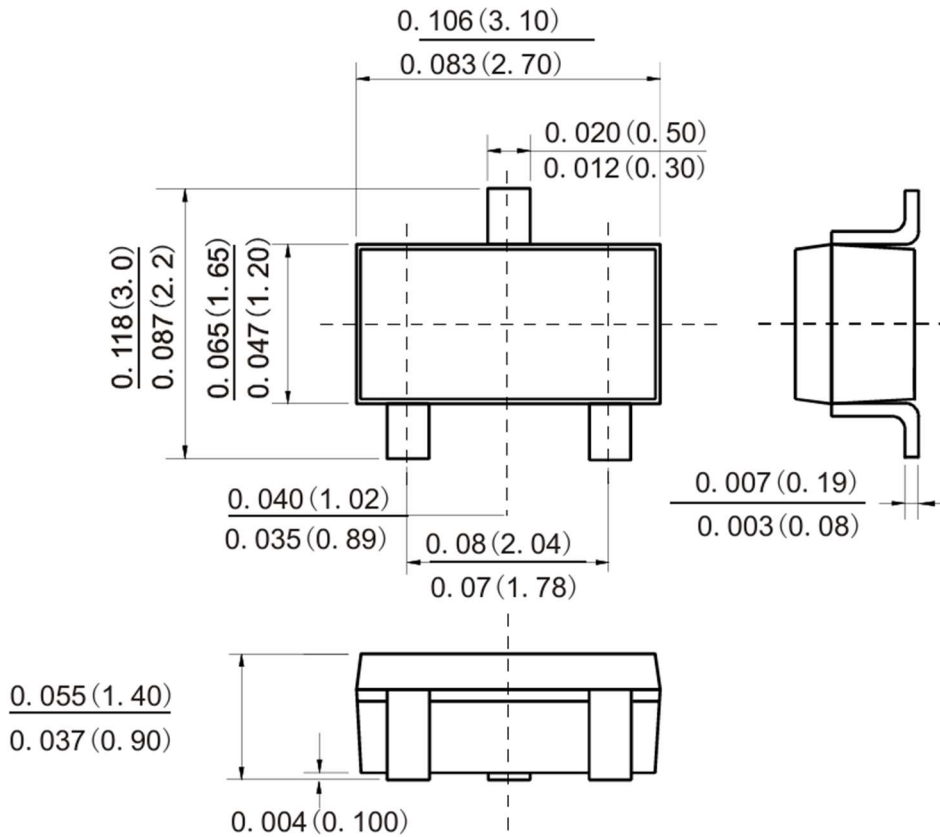


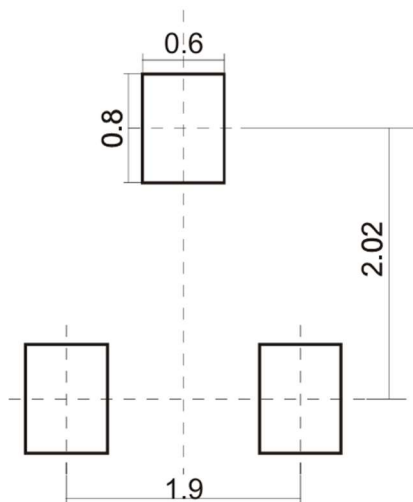
Fig8. Switching wave

Package Outline Dimensions (Units: mm) SOT-23



Dimensions in inches and (millimeters)

Suggested Pad Layout



Dimensions in millimeters

Order Information

Part Number	Package	Quantity
Sh2N7002K	SOT-23	3000