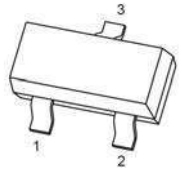
SOT-23 Plastic-Encapsulate MOSFETS

N-Channel MOSFET

DESCRIPTION

This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance.

SOT-23

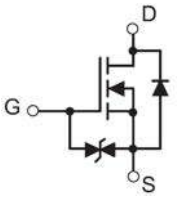


1.GATE
2.SOURCE
3.DRAIN

FEATURES

- High density cell design for Low $R_{DS(on)}$
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability
- ESD protected

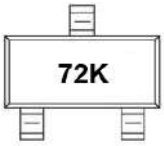
EQUIVALENT CIRCUIT

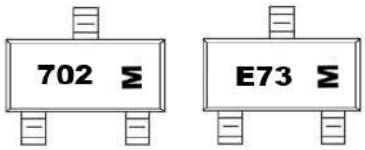


APPLICATIONS

- Load Switch for Portable Devices
- DC/DC Converter

MARKING





Marking = 72K / 702 / E73

Code M: Date code

Key Performance Parameters

$V_{BR(DSS)}$	$R_{DS(on)}$TYP	I_D
60V	0.73Ω@10V	0.5A
	0.80Ω@4.5V	

ABSOLUTE MAXIMUM RATINGS (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_A =25℃	I_D⑤	0.5	A
	T_A =75℃		0.4	
Pulsed Drain Current		I_{DM}①②	2	A
Power Dissipation		P_D①⑤	0.6	W
Operating Junction and Storage Temperature Range		T_J,T_{stg}	-55~+150	℃

Thermal Characteristics

Parameter		Symbol	Value		Unit
			Typ	Max	
Thermal Resistance from Junction to Ambient	t≤10s	$R_{θJA}$⑤	160	200	℃/W
	Steady State		190	240	℃/W

Typical Characteristics

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Static Characteristics

Parameter	Symbol	Test Condition		Value			Unit
				Min	Typ	Max	
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA		60	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=60V,V_{GS}=0V	T_J=25℃	-	-	1.0	μA
			T_J=125℃	-	-	100	
Gate-body leakage current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V		-	-	±10	μA
Gate-threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA		1.0	1.5	2.0	V
Static drain-source on-sate resistance	$R_{DS(on)}$③	V_{GS}=10V, I_D=500mA	T_J=25℃	-	0.73	1.2	Ω
			T_J=125℃	-	1.28	2.2	
		V_{GS}=4.5V, I_D=200mA		-	0.80	1.5	
Forward tranconductance	g_{FS}	V_{DS}=3V, I_D=500mA		-	1	-	S

Dynamic Characteristics④

Input capacitance	C_{iss}	V_{GS}=0V, V_{DS}=30V, f=1MHz	-	37	-	pF
Output capacitance	C_{oss}		-	11	-	
Reverse transfer capacitance	C_{rss}		-	5.2	-	
Total gate charge	Q_g	V_{GS}=4.5V, V_{DS}=30V, I_D=500mA		0.61		nC
		V_{GS}=10V, V_{DS}=30V, I_D=500mA	-	1.04	-	
Gate charge at threshold	$Q_{G(th)}$		-	0.10	-	
Gate-source charge	Q_{gs}		-	0.18	-	
Gate-drain charge	Q_{gd}		-	0.31	-	
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V, V_{GS}=10V, R_L=250Ω, R_g=50Ω	-	6.0	-	ns
Turn-on rise time	t_r		-	5.1	-	
Turn-off delay time	$t_{d(off)}$		-	54	-	
Turn-off fall time	t_f		-	37	-	

Reverse Diode Characteristics

Drain-source diode forward voltage	V_{SD}③	V_{GS}=0V, I_S=300mA	-	-	1.2	V
Continuous drain-source diode forward current	I_S①		-	-	0.5	A
Pulsed drain-source diode forward current	I_{SM}①②		-	-	2	A

Notes:

①.Limited only by maximum temperature allowed.

②.P_W ≤10μs, Duty cycle ≤1%.

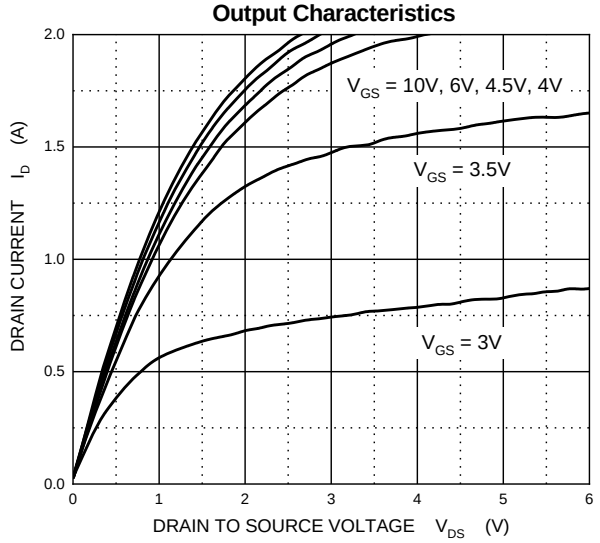
③.Pulse Test : Pulse Width ≤380μs, duty cycle ≤2%.

④.Guaranteed by design, not subject to production.

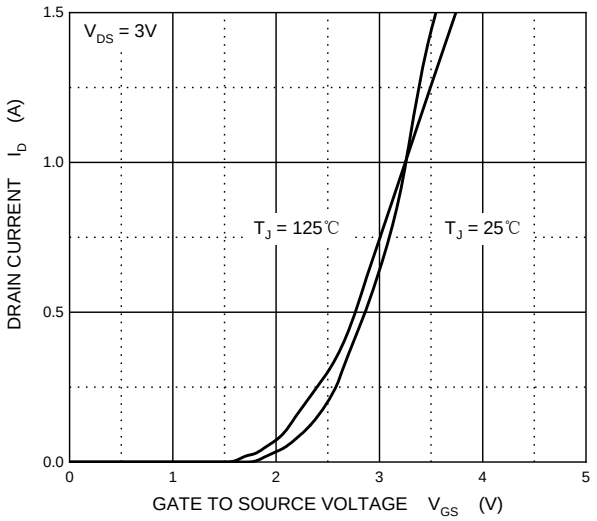
⑤.Device mounted on 1 in^2 FR-4 board with 2oz. double-sided Copper, in a still air environment with T_A=25℃.The current rating is based on the t ≤10s thermal resistance rating.

Typical Characteristics

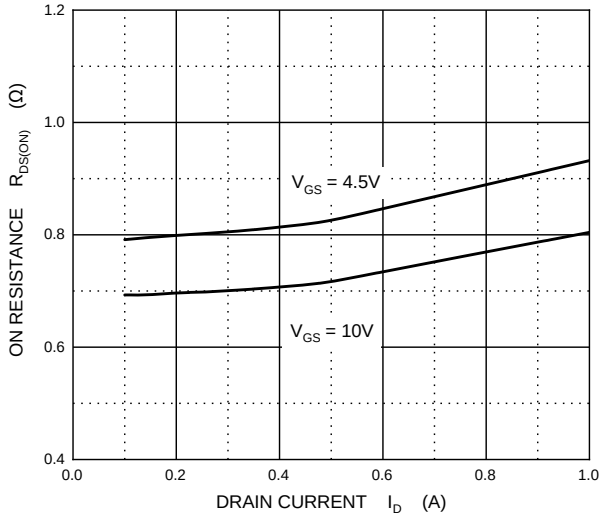
Output Characteristics



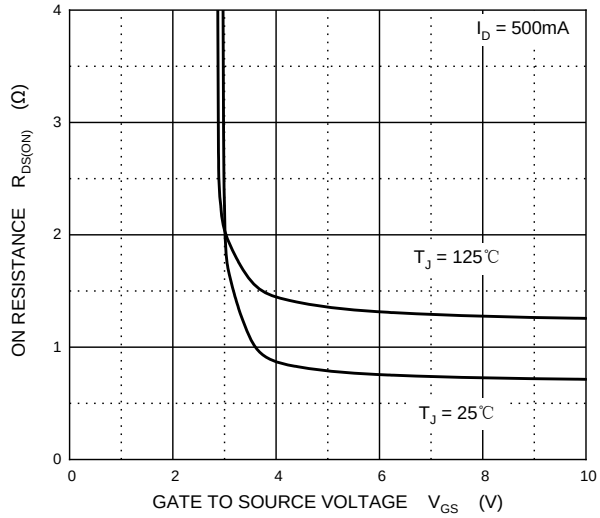
Transfer Characteristics



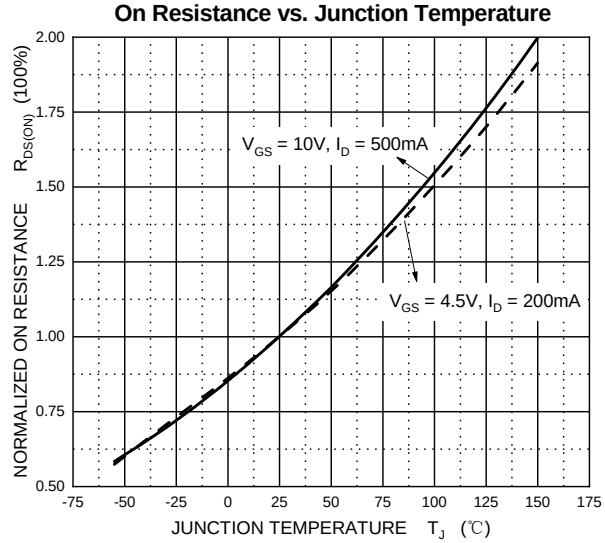
On Resistance vs. Drain Current



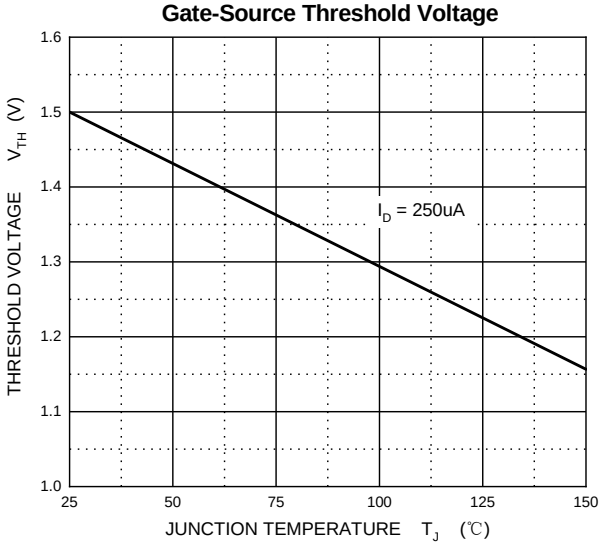
On Resistance vs. Gate-Source Bias



On Resistance vs. Junction Temperature

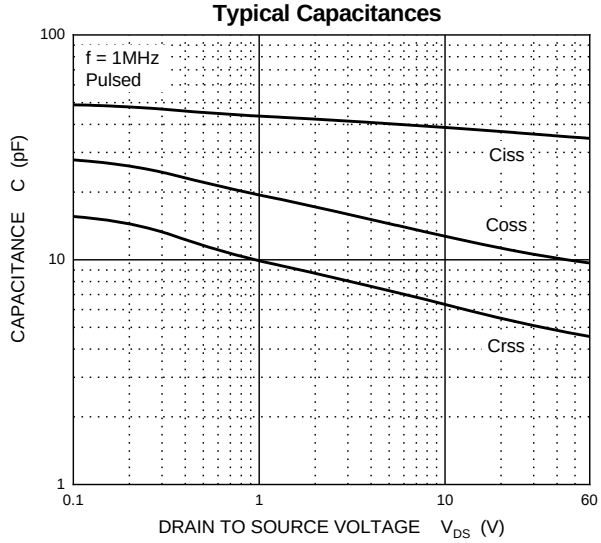


Gate-Source Threshold Voltage

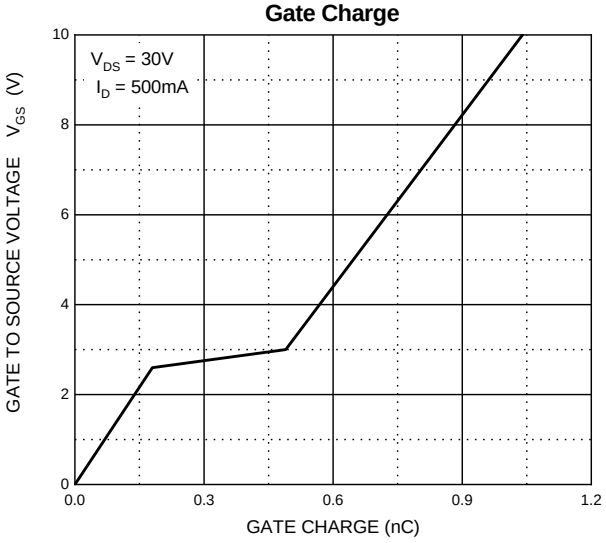


Typical Characteristics

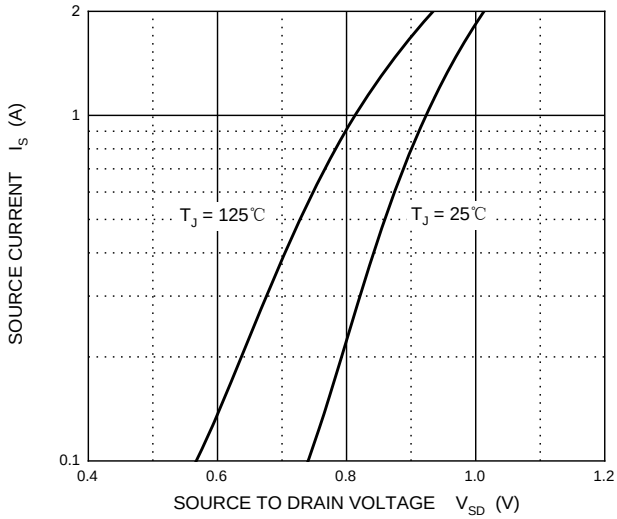
Typical Capacitances



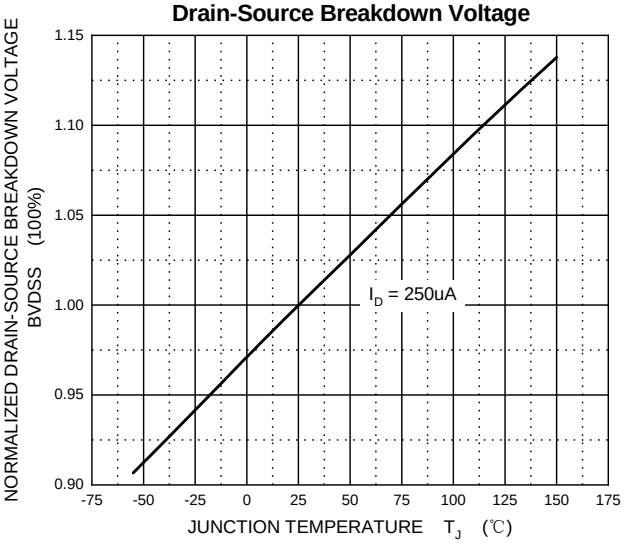
Gate Charge



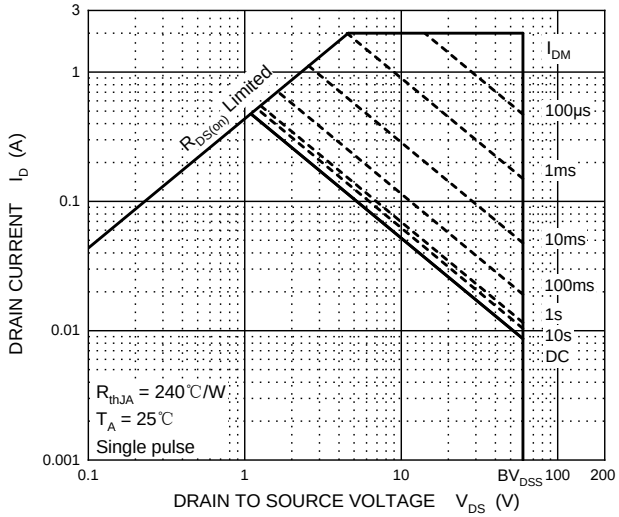
Source-Drain Diode Forward Characteristics



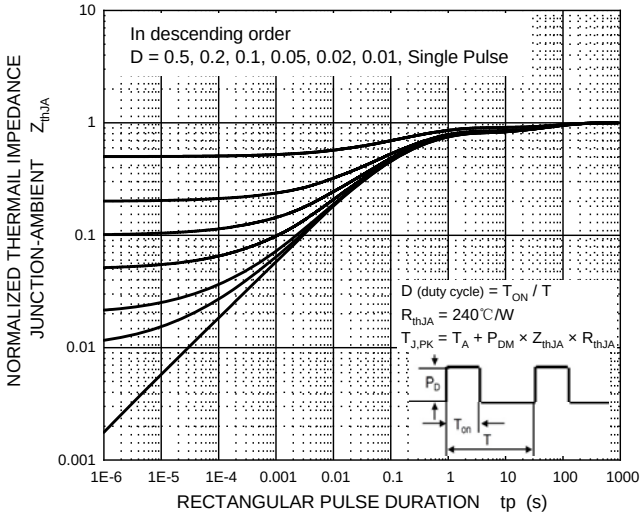
Drain-Source Breakdown Voltage



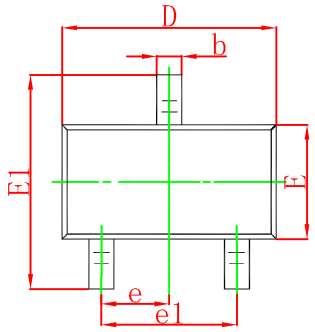
Maximum Safe Operating Area

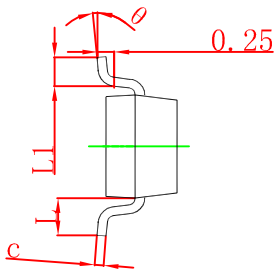


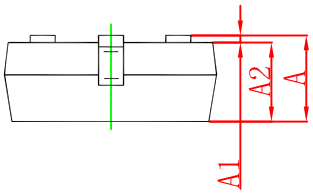
Transient Thermal Impedance, Junction-Ambient



SOT-23 Package Outline Dimensions

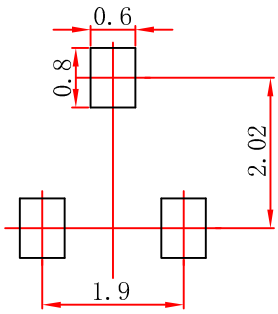






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

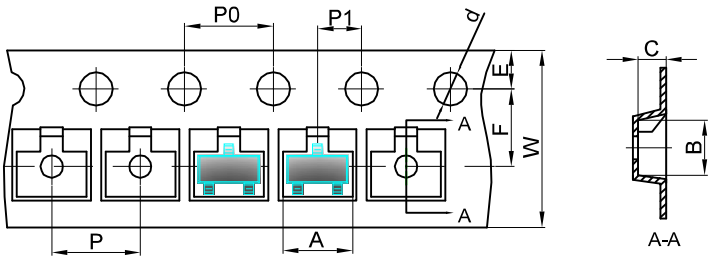
SOT-23 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

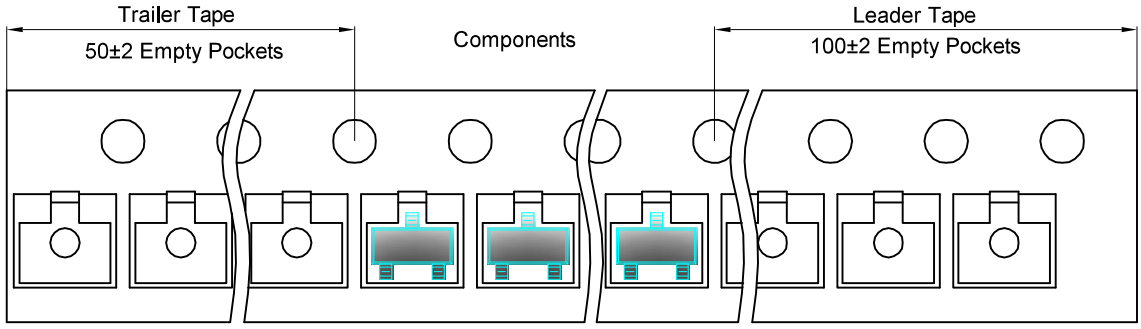
SOT-23 Tape and reel

SOT-23 Embossed Carrier Tape

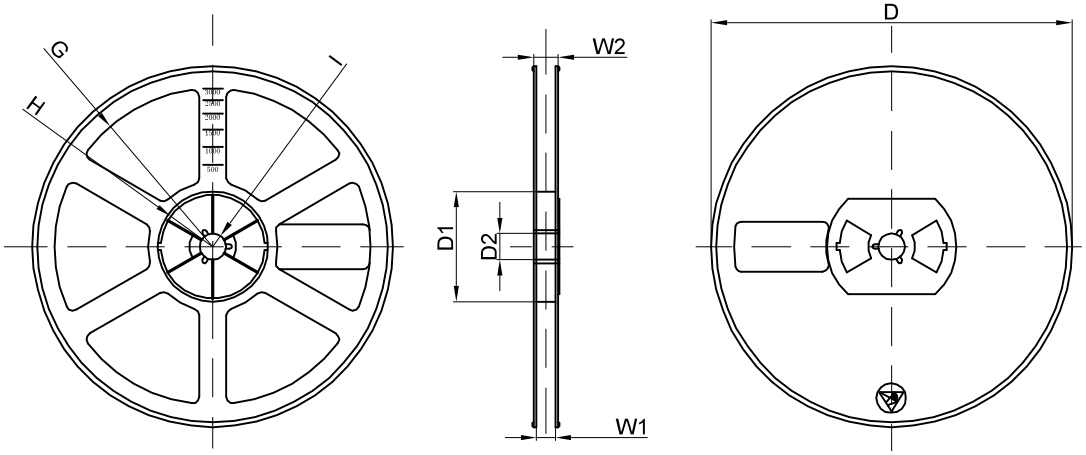


Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer



SOT-23 Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	30,000 pcs	203×203×195	120,000 pcs	438×438×220	