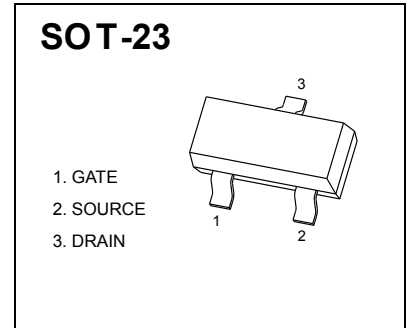


**SOT-23 Plastic-Encapsulate MOSFETS**
**60V N-Channel Enhancement Mode MOSFET**

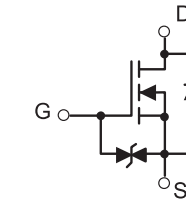
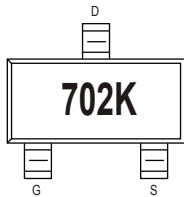
$V_{(BR)DSS}$	$R_{DS(on)Typ}$	$I_D MAX$
60V	0.9Ω@10V	500mA
	1.1Ω@4.5V	


**FEATURE**

- High density cell design for low  $R_{DS(ON)}$
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability
- HMB ESD protected (2000V)

**APPLICATION**

- Load Switch for Portable Devices
- DC/DC Converter

**MARKING**

**Equivalent circuit**
**PACKAGE SPECIFICATIONS**

Package	Reel Size	Reel DIA. (mm)	Q'TY/Reel (pcs)	Box Size (mm)	QTY/Box (pcs)	Carton Size (mm)	Q'TY/Carton (pcs)
SOT-23	7'	330	3000	203×203×195	45000	438×438×220	180000

**MAXIMUM RATINGS ( $T_a=25^{\circ}C$  unless otherwise noted)**

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	0.5	A
Power Dissipation	$P_D$	0.3	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	400	$^{\circ}C/W$
Junction Temperature	$T_J$	150	$^{\circ}C$
Storage Temperature	$T_{stg}$	-50 ~+150	



**MOSFET ELECTRICAL CHARACTERISTICS**

T<sub>a</sub>=25°C unless otherwise specified

Symbol	Parameter	Condition	Min	Typ	Max	Unit
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V I <sub>D</sub> =250μA	60	--	--	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current(T <sub>A</sub> =25°C)	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V	--	--	1	μA
	Zero Gate Voltage Drain Current(T <sub>A</sub> =125°C)	V <sub>DS</sub> =50V, V <sub>GS</sub> =0V	--	--	100	uA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	--	--	±10	uA
V <sub>GS(TH)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0	1.6	2.5	V
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance②	V <sub>GS</sub> =10V, I <sub>D</sub> =0.5A	--	0.9	2	Ω
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance②	V <sub>GS</sub> =4.5V, I <sub>D</sub> =0.3A	--	1.4	3	Ω

**Dynamic Electrical Characteristics**

C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, f=1MHz	--	23.8	--	pF
C <sub>oss</sub>	Output Capacitance		--	3.9	--	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		--	1.5	--	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =30V I <sub>D</sub> =0.5A, V <sub>GS</sub> =10V	--	0.93	--	nC
Q <sub>gs</sub>	Gate Source Charge		--	0.18	--	nC
Q <sub>gd</sub>	Gate Drain Charge		--	0.31	--	nC

**Switching Characteristics**

t <sub>d(on)</sub>	Turn on Delay Time	V <sub>DD</sub> =30V, I <sub>D</sub> =0.3A, R <sub>G</sub> =3.3Ω, V <sub>GS</sub> =10V	--	6	--	ns
t <sub>r</sub>	Turn on Rise Time		--	3.5	--	ns
t <sub>d(off)</sub>	Turn Off Delay Time		-	20	--	ns
t <sub>f</sub>	Turn Off Fall Time		--	5.9	--	ns

**Source Drain Diode Characteristics**

I <sub>SD</sub>	Source drain current(Body Diode)	T <sub>A</sub> =25°C	--	--	0.2	A
V <sub>SD</sub>	Forward on voltage②	T <sub>J</sub> =25°C, I <sub>SD</sub> =0.5A, V <sub>GS</sub> =0V	--	0.78	1.2	V

Notes:

① Pulse width limited by maximum allowable junction temperature

②Pulse test ; Pulse width≤300μs, duty cycle≤2%.

Typical Characteristics

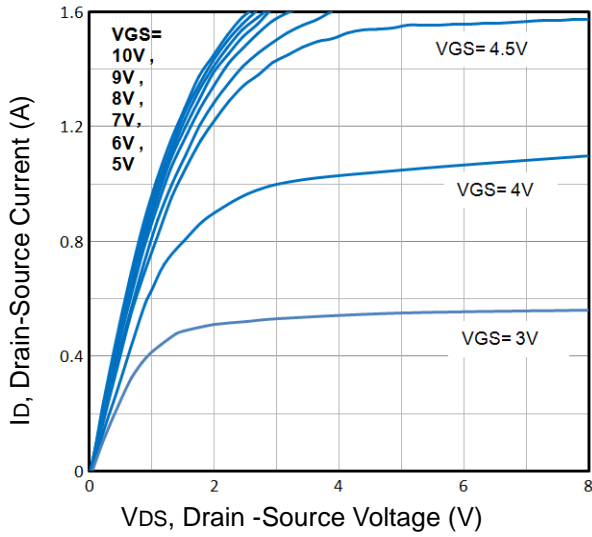


Fig1. Typical Output Characteristics

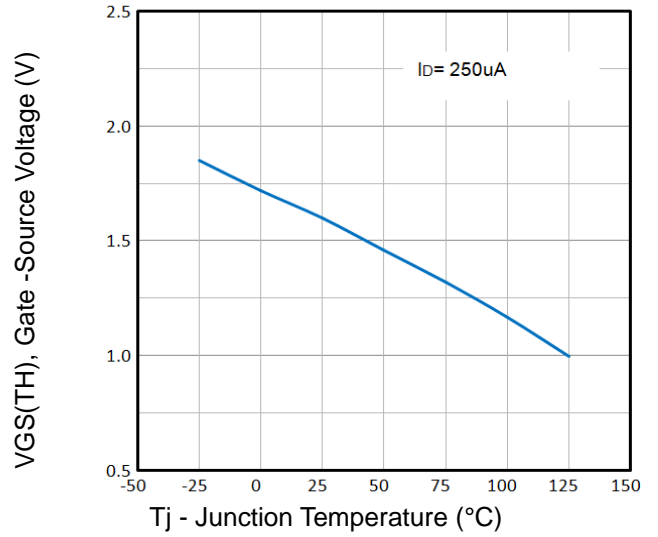


Fig2. Normalized Threshold Voltage Vs. Temperature

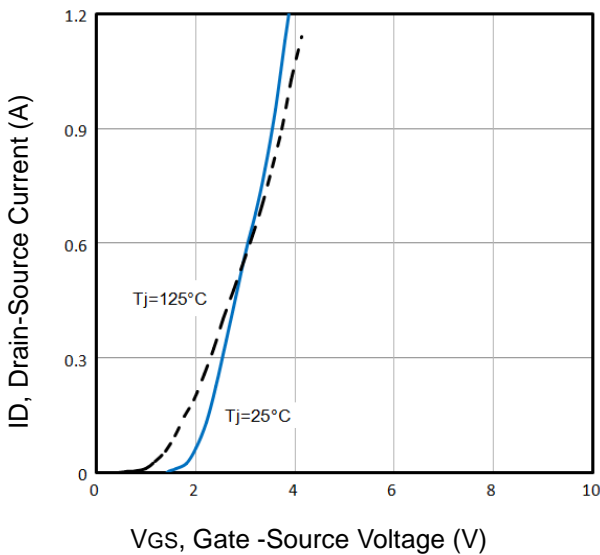


Fig3. Typical Transfer Characteristics

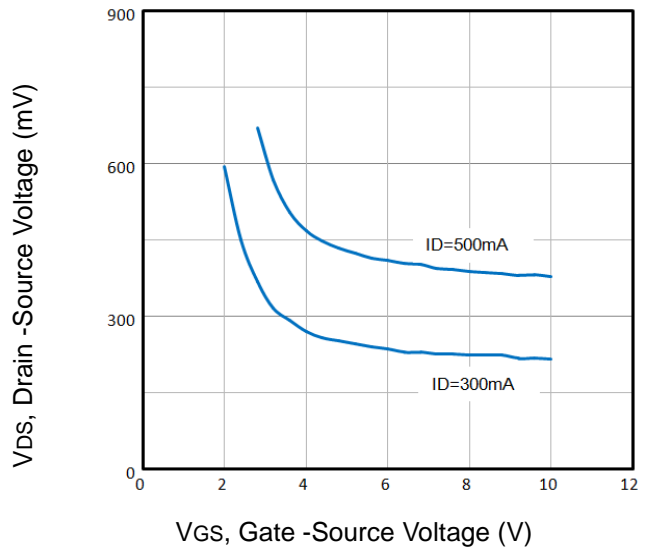


Fig4. Drain-Source Voltage vs Gate-Source Voltage

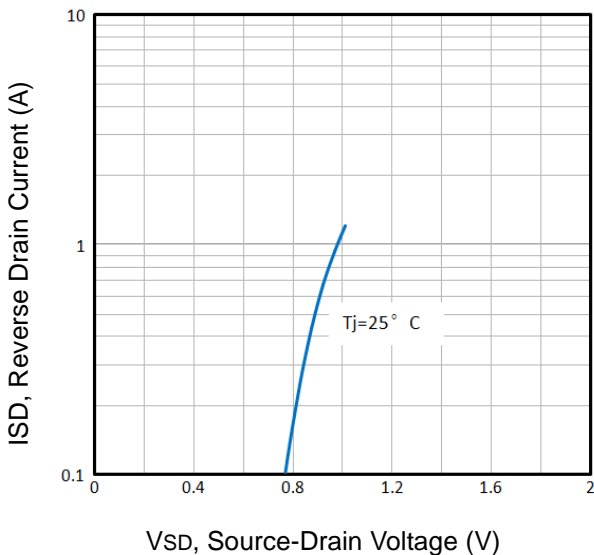


Fig5. Typical Source-Drain Diode Forward Voltage

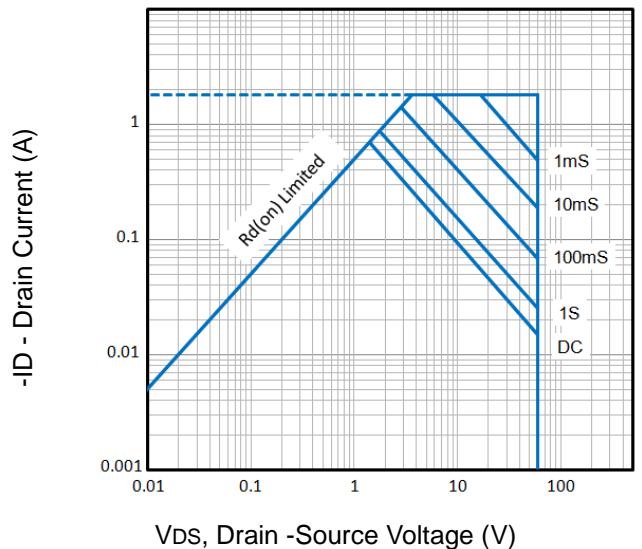


Fig6. Maximum Safe Operating Area

The curve above is for reference only.

Typical Characteristics

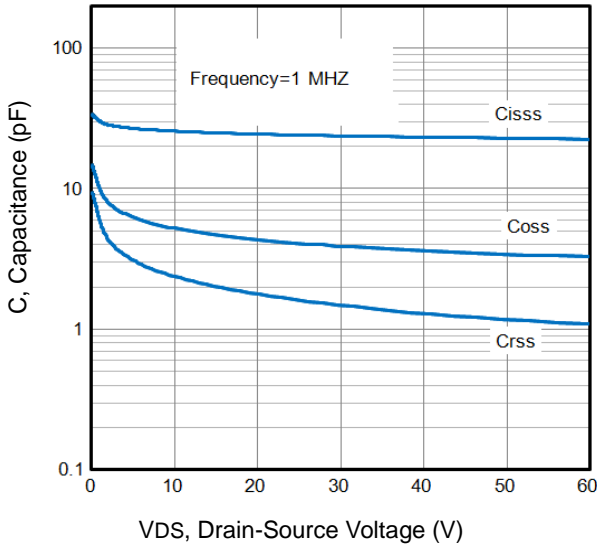


Fig7. Typical Capacitance Vs. Drain-Source Voltage

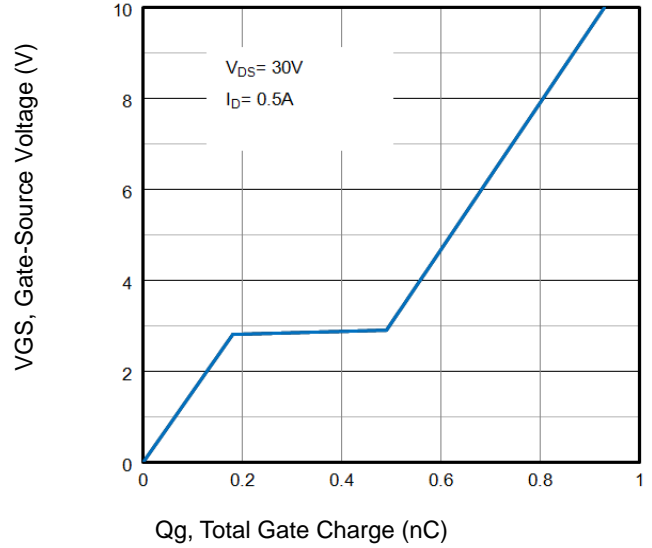


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

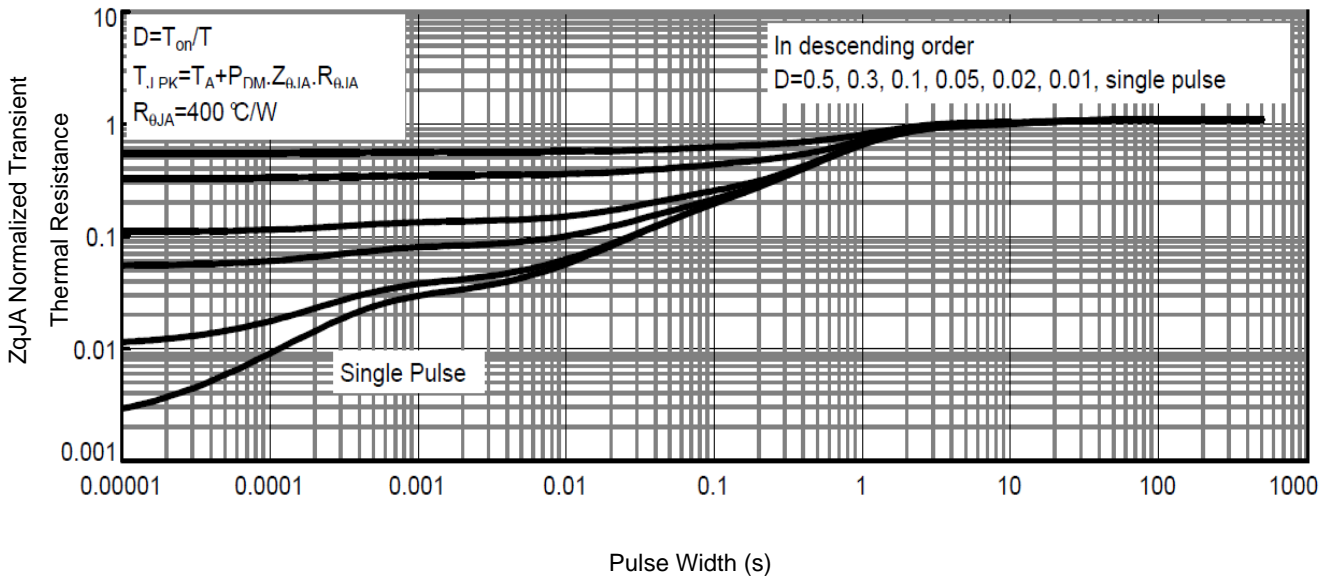


Fig9. Normalized Maximum Transient Thermal Impedance

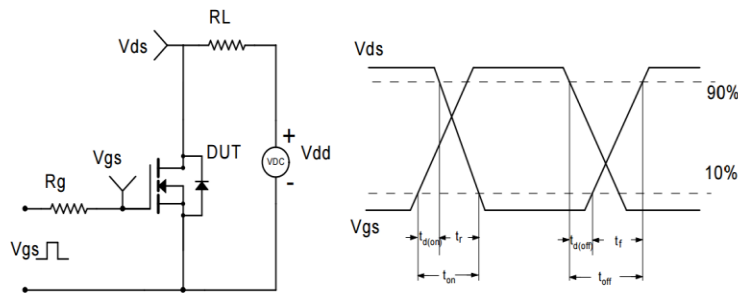
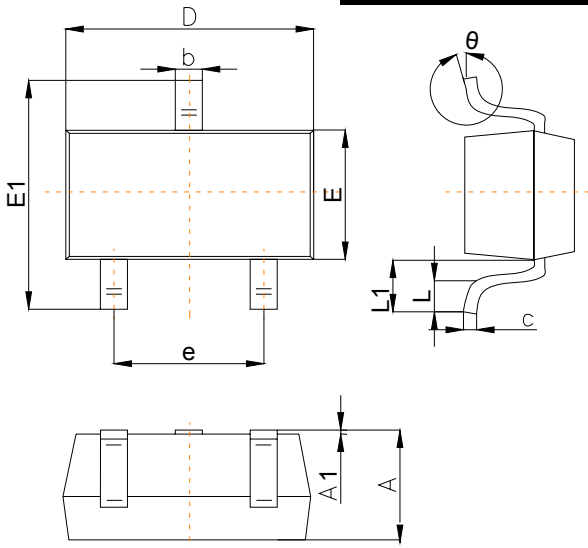


Fig10. Switching Time Test Circuit and waveforms

The curve above is for reference only.

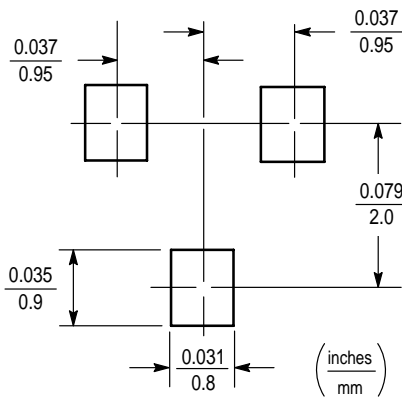
**Outline Drawing**

**SOT-23 Package Outline Dimensions**



Symbol	Dimensions In Millimeters		
	Min	Typ	Max
A	1.00		1.40
A1			0.10
b	0.35		0.50
c	0.10		0.20
D	2.70	2.90	3.10
E	1.40		1.60
E1	2.4		2.80
e		1.90	
L	0.10		0.30
L1	0.4		
θ	0°		10°

**Suggested Pad Layout**



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

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