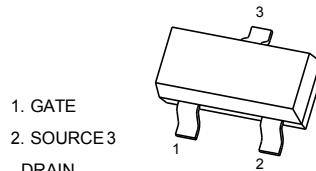


60V N-Channel Enhancement Mode MOSFET

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

SOT-23



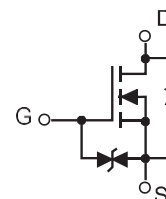
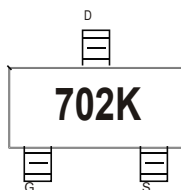
FEATURE

- 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	

T_a=25°C unless otherwise specified

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

Dynamic Electrical Characteristics

C _{iss}	Input Capacitance	V _{DS} =30V, V _{GS} =0V, f=1MHz	--	23.8	--	pF
C _{oss}	Output Capacitance		--	3.9	--	pF
C _{rss}	Reverse Transfer Capacitance		--	1.5	--	pF
Q _g	Total Gate Charge	V _{DS} =30V I _D =0.5A, V _{GS} =10V	--	0.93	--	nC
Q _{gs}	Gate Source Charge		--	0.18	--	nC
Q _{gd}	Gate Drain Charge		--	0.31	--	nC

Switching Characteristics

t _{d(on)}	Turn on Delay Time	V _{DD} =30V, I _D =0.3A, R _G =3.3Ω, V _{GS} =10V	--	6	--	ns
t _r	Turn on Rise Time		--	3.5	--	ns
t _{d(off)}	Turn Off Delay Time		-	20	--	ns
t _f	Turn Off Fall Time		--	5.9	--	ns

Source Drain Diode Characteristics

I _{SD}	Source drain current(Body Diode)	T _A =25°C	--	--	0.2	A
V _{SD}	Forward on voltage②	T _J =25°C, I _{SD} =0.5A, V _{GS} =0V	--	0.78	1.2	V

Notes:

① Pulse width limited by maximum allowable junction temperature

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

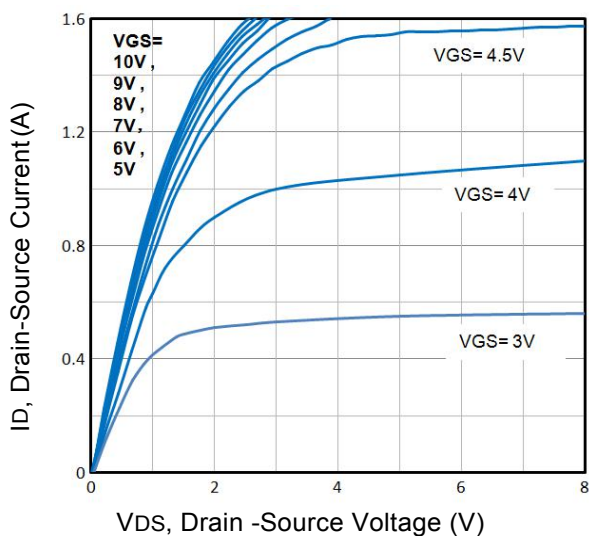


Fig1. Typical Output Characteristics

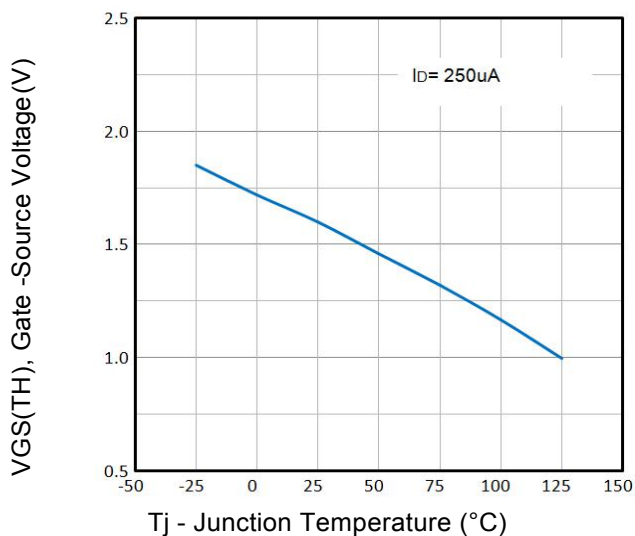


Fig2. Normalized Threshold Voltage Vs. Temperature

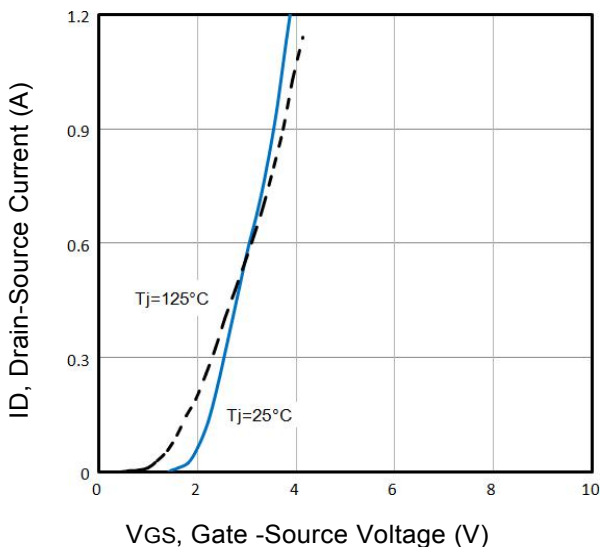


Fig3. Typical Transfer Characteristics

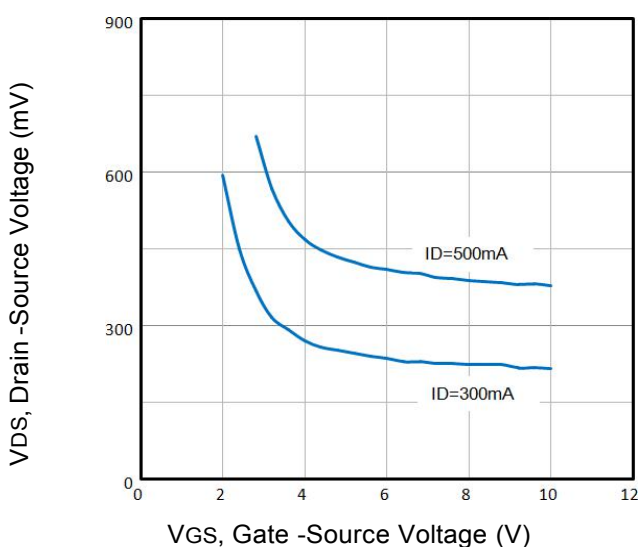


Fig4. Drain-Source Voltage vs Gate-Source Voltage

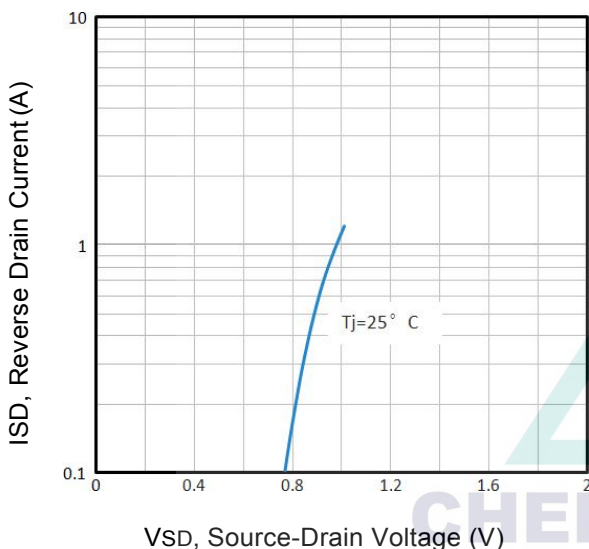


Fig5. Typical Source-Drain Diode Forward Voltage

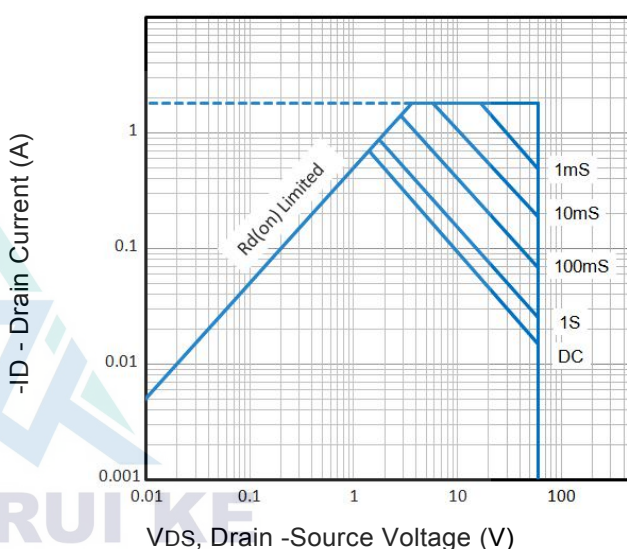


Fig6. Maximum Safe Operating Area

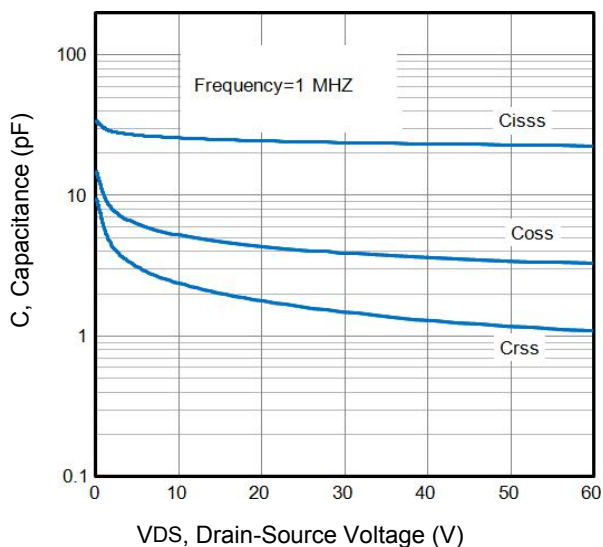


Fig7. Typical Capacitance Vs. Drain-Source Voltage

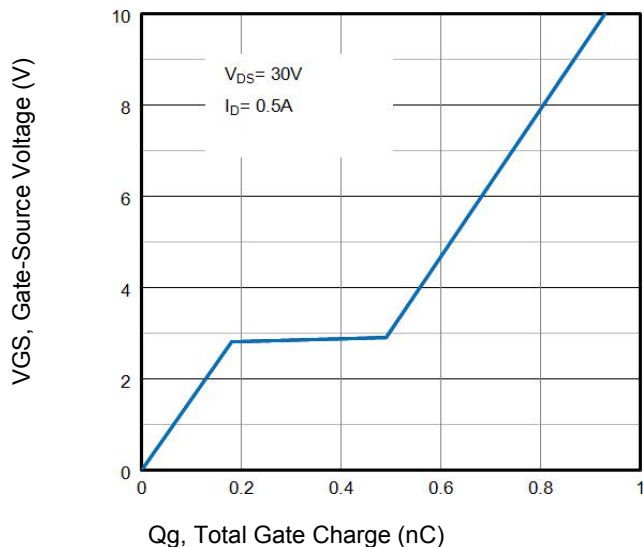


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

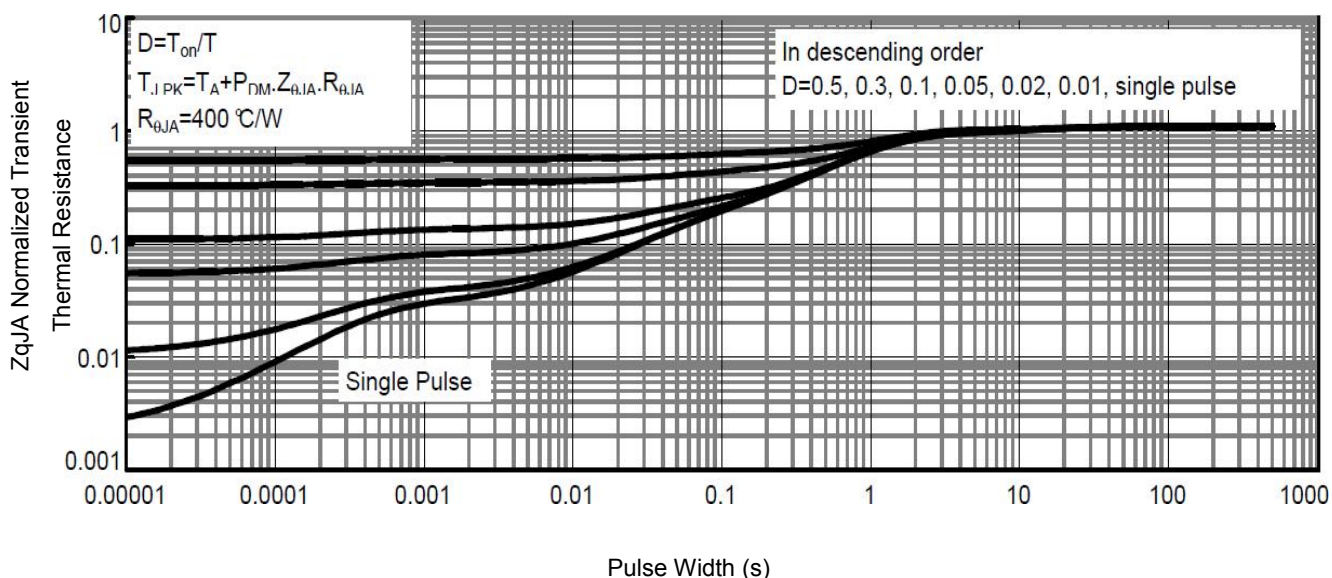


Fig9. Normalized Maximum Transient Thermal Impedance

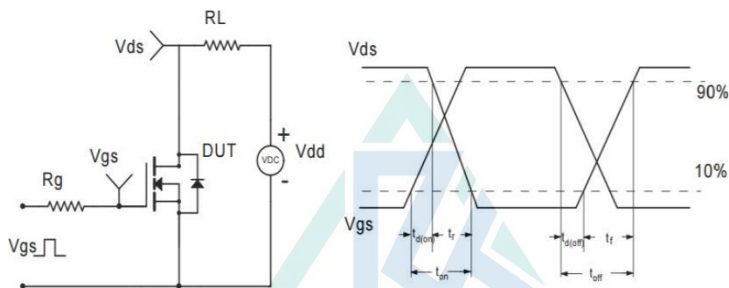
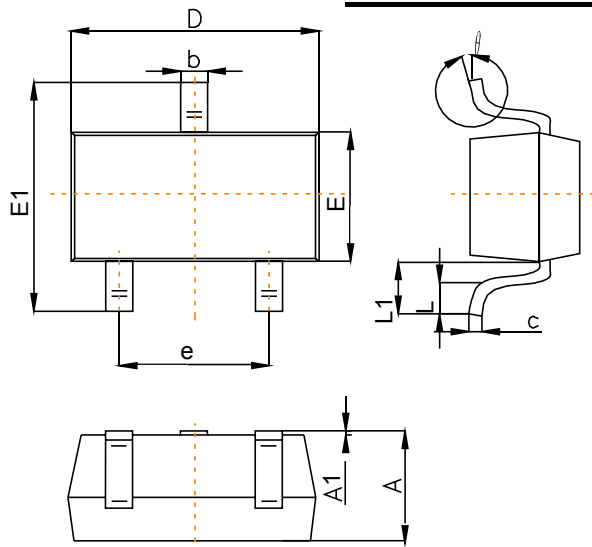


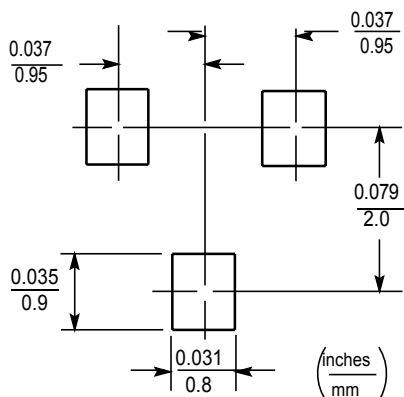
Fig10. Switching Time Test Circuit and waveforms

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: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.