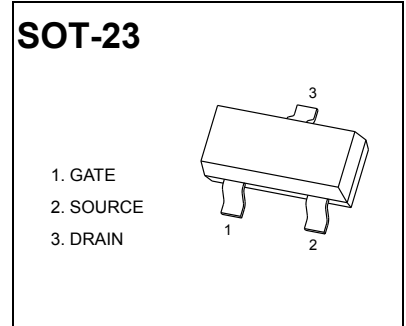


SOT-23 Plastic-Encapsulate MOSFETS

30V N-Channel Enhancement Mode Field Effect Transistor

$V_{(BR)DSS}$	$R_{DS(on)}$ Typ	I_D
30V	27mΩ @ 4.5V	5.8A
	29mΩ @ 3.3V	



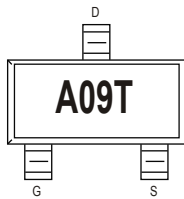
FEATURE

High dense cell design for extremely low RDS(ON)
Exceptional on-resistance and maximum DC current capability

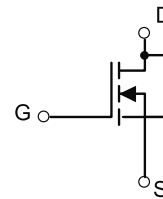
APPLICATION

- 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 ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	30	V	
Gate-Source Voltage	V_{GS}	±12		
Continuous Drain Current	I_D	$T_A=25^\circ\text{C}$	5.8	A
		$T_A=70^\circ\text{C}$	4.6	
Maximum Power Dissipation ²⁾	P_D	$T_A=25^\circ\text{C}$	1.5	W
		$T_A=70^\circ\text{C}$	0.9	
Pulsed Drain Current ¹⁾	I_{DM}	23	A	
Operating Junction and Storage Temperature Range	T_J	150	°C	
Storage Temperature Range	T_{stg}	-50 to 150	°C	
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	100	°C/W	

Notes

- 1) Pulse width limited by maximum junction temperature.
- 2) Surface Mounted on FR4 Board, $t \leq 5$ sec.
- 3) The above data are for reference only.



MOSFET ELECTRICAL CHARACTERISTICS

T_a=25 °C unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Off Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250uA	30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =24V, V _{GS} = 0V			1	uA
	I _{DSS}	V _{DS} =24V, V _{GS} = 0V			100	uA
Gate-source leakage current	I _{GSS}	V _{GS} =±12V, V _{DS} = 0V			±100	nA
On characteristics						
Drain-source on-resistance (note 3)	R _{DS(on)}	V _{GS} =4.5V, I _D =5.8A		27	32	m
		V _{GS} =3.3V, I _D =4A		29	45	m
		V _{GS} =2.5V, I _D =2A		35	50	m
Forward tranconductance	g _{FS}	V _{DS} =5V, I _D =5A	8			S
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	0.5	0.8	1.2	V
Dynamic Characteristics (note 4)						
Input capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f =1MHz		635		pF
Output capacitance	C _{oss}			135		pF
Reverse transfer capacitance	C _{rss}			40		pF
Total Gate Charge	Q _g	V _{DS} =15V I _D =5A, V _{GS} =4.5V		10.5		nC
Gate Source Charge	Q _{gs}			1.6		nC
Gate Drain Charge	Q _{gd}			2.7		nC
Switching Characteristics (note 4)						
Turn-on delay time	t _{d(on)}	V _{DD} =15V, I _D =5A, R _G =3.3Ω, V _{GS} =4.5V		7.5		ns
Turn-on rise time	t _r			18		ns
Turn-off delay time	t _{d(off)}			36		ns
Turn-off fall time	t _f			5		ns
Drain-source diode characteristics and maximum ratings						
Source drain current(Body Diode)	I _{SD}	T _A =25 °C			1.5	A
Diode forward voltage (note 3)	V _{SD}	I _S =3A, V _{GS} =0V		0.82	1.2	V

Note :

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 5 sec.
3. Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.

Typical Characteristics

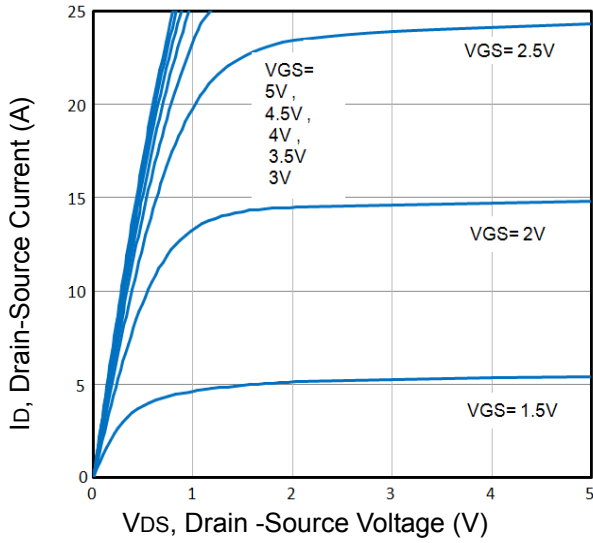


Fig1. Typical Output Characteristics

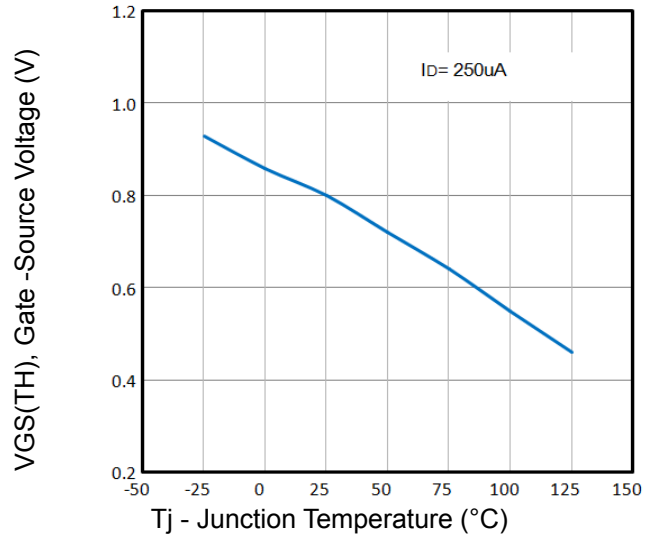


Fig2. Normalized Threshold Voltage Vs. Temperature

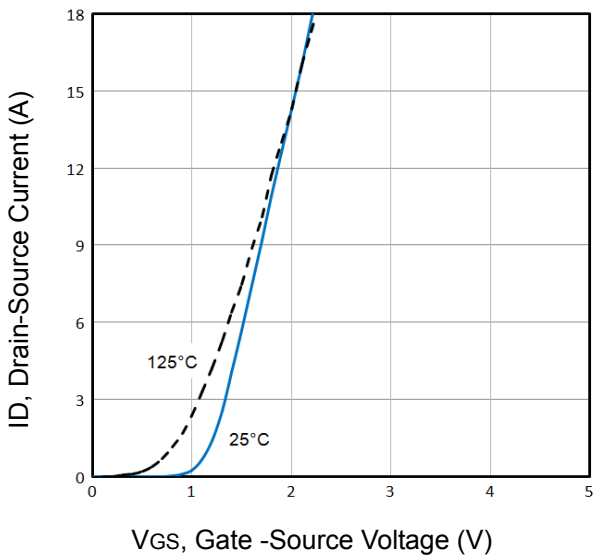


Fig3. Typical Transfer Characteristics

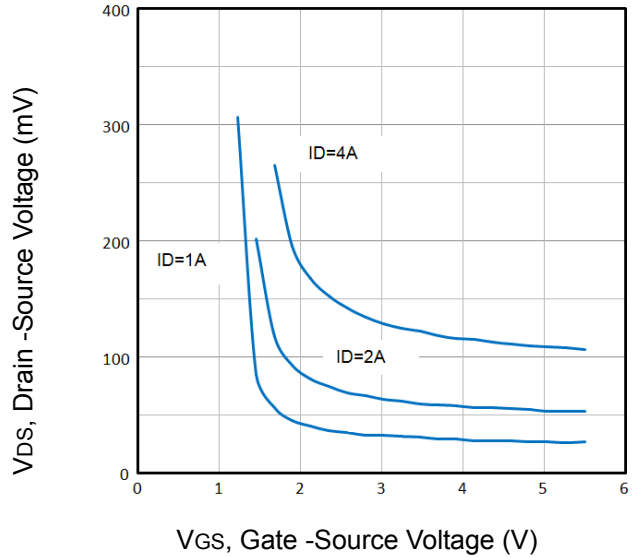


Fig4. Drain-Source Voltage vs. Gate-Source Voltage

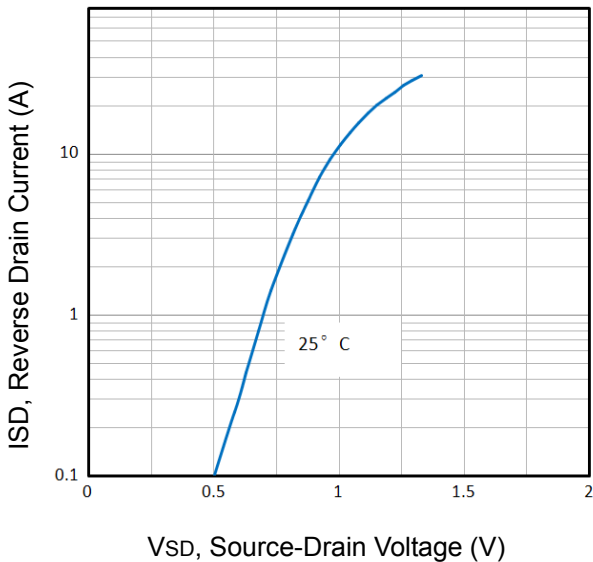


Fig5. Typical Source-Drain Diode Forward Voltage

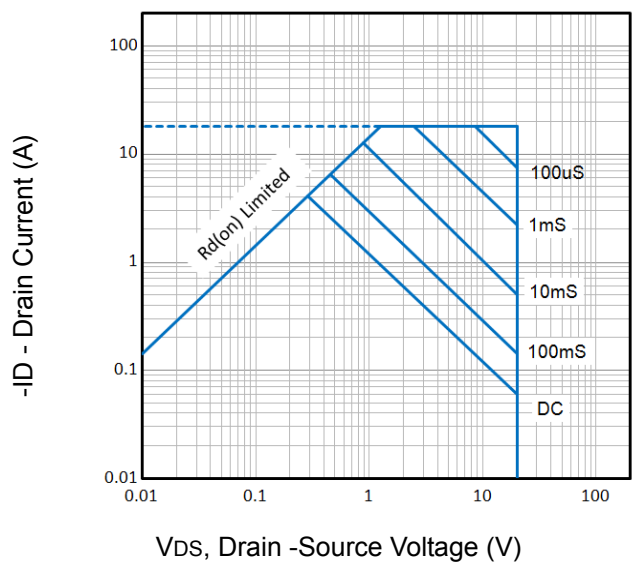


Fig6. Maximum Safe Operating Area

The curve above is for reference only.

Typical Characteristics

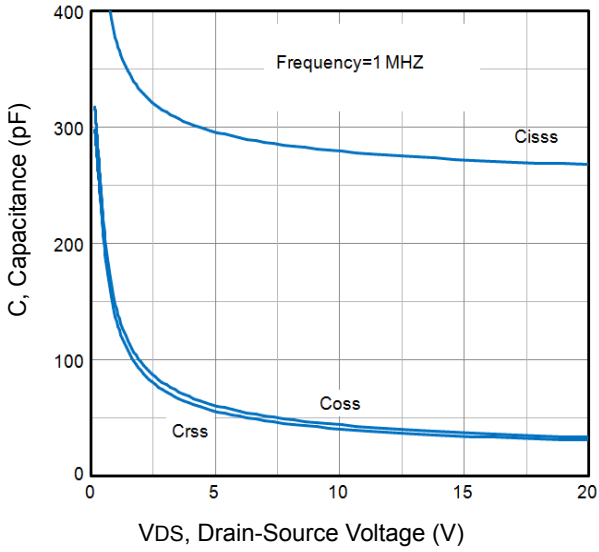


Fig7. Typical Capacitance Vs. Drain-Source Voltage

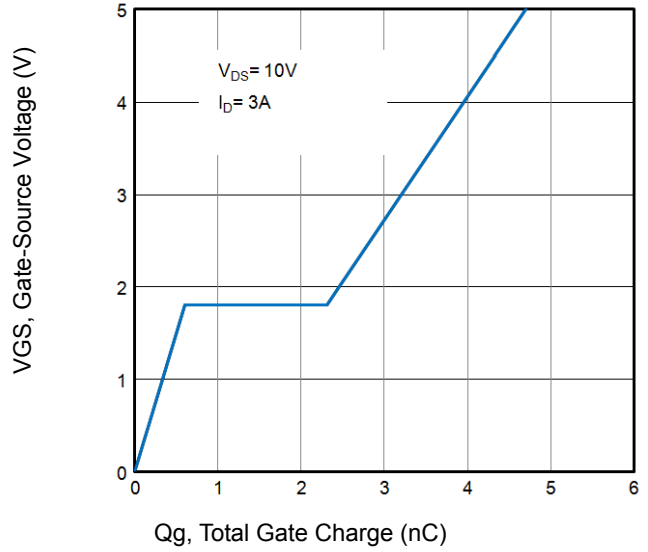


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

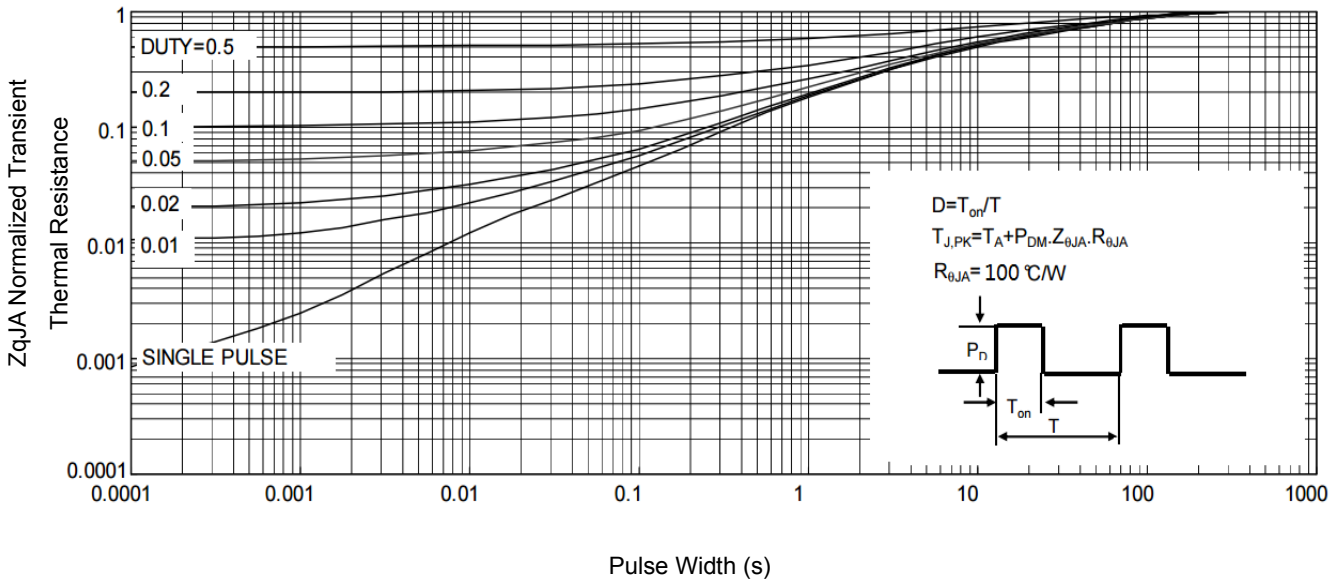


Fig9. Normalized Maximum Transient Thermal Impedance

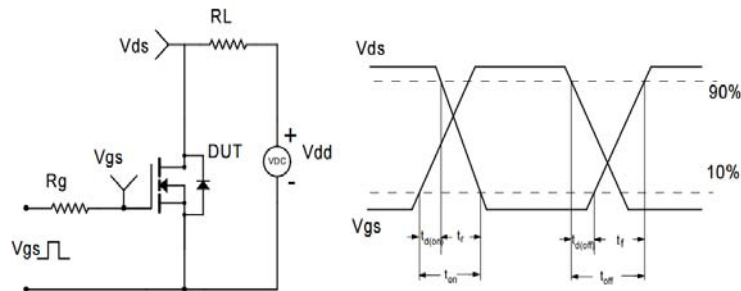
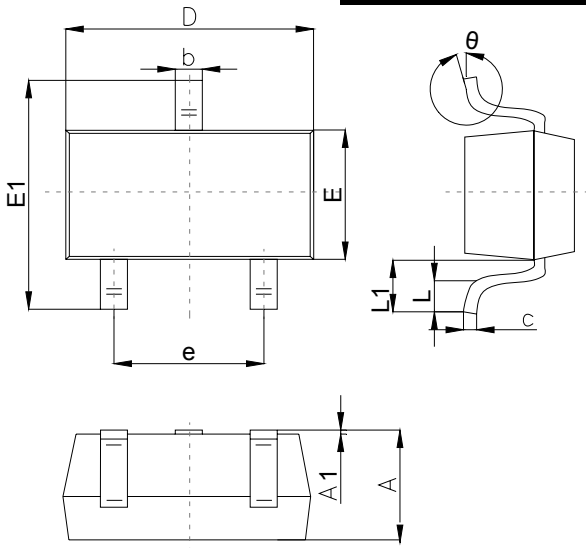
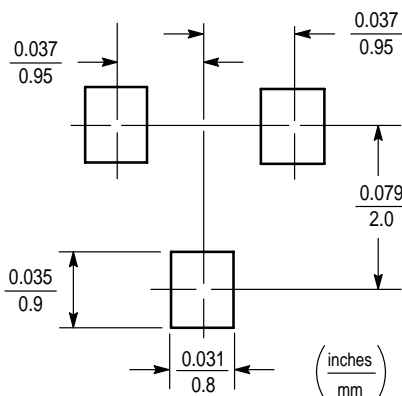


Fig10. Switching Time Test Circuit and waveforms

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

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