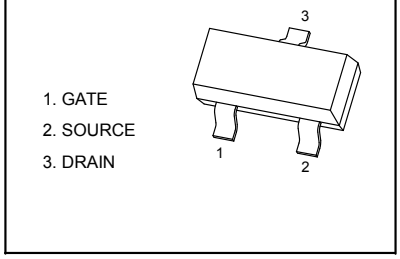
SI2306

SOT-23 Plastic-Encapsulate MOSFETS

30V N-Channel MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$Typ	I_D Max
30V	28mΩ@10V	5.0A
	38mΩ@4.5V	

SOT-23



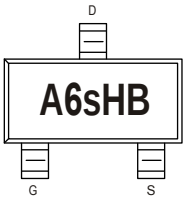
FEATURE

- Trench FET Power MOSFET

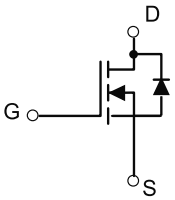
APPLICATION

- 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'	178	3000	203×203×195	45000	438×438×220	180000

Maximum Ratings and Thermal Characteristics (TA = 25°C unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_A= 25°C	I_D	5.0	A
	T_A= 70°C		4	
Pulsed Drain Current [1]		I_{DM}	20.4	A
Maximum Power Dissipation [1),2)]	T_A= 25°C	P_D	1.5	W
	T_A= 70°C		0.9	
Maximum Junction Temperature		T_J	150	°C
Storage Temperature Range		T_{stg}	-50 to 150	°C
Thermal Resistance from Junction-to-Ambient (t≤5s)		$R_{\theta JA}$	80	°C/W

Notes
1) Pulse width limited by maximum junction temperature.
2) Surface Mounted on FR4 Board, t ≤ 5 sec.

The above data are for reference only.

MOSFET ELECTRICAL CHARACTERISTICS

T_a=25℃ unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Static						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D=250μA	30			V
Gate-body leakage	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
Zero gate voltage drain current	I_{DSS}	V_{DS} =30V, V_{GS} =0V			1	μA
		V_{DS} =24V, V_{GS} =0V			100	μA
Gate-threshold voltage (note 1)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.0	1.6	2.5	V
Ddrain-source on-resistance (note 1)	$R_{DS(on)}$	V_{GS} =10V, I_D =4A		28	36	mΩ
		V_{GS} =4.5V, I_D =3A		38	50	
Forward transconductance (note 1)	g_{FS}	V_{DS} =4.5V, I_D =2.5A		7		S
Dynamic characteristics						
Gate Resistance	R_g	f=1MHz	2.5	5	7.5	Ω
Total Gate C harge	Q_g	V_{DS} =15V,I_D=4A,V_{GS} =10V		6		nC
Gate-Source Charge	Q_{gs}			0.5		
Gate-Drain Charge	Q_{gd}			1.3		
Input capacitance	C_{iss}	V_{DS} =15V,V_{GS} =0V, f=1MHz		240		pF
Output capacitance	C_{oss}			35		
Reverse transfer capacitance	C_{rss}			30		
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=15V, V_{GS}=10V, I_D =1A,R_G=3.3Ω		4.4		ns
Rise time	t_r			2.6		
Turn-off delay time	$t_{d(off)}$			25.5		
Fall time	t_f			3.3		
Drain-source body diode characteristics						
Source drain current(Body Diode)	I_{SD}				1.8	A
Body diode forward voltage (note 1)	V_{SD}	I_{SD}=4A, V_{GS} = 0V		0.85	1.2	V

Notes :

1. Pulse Test : Pulse Width≤ 300μs, Duty Cycle≤ 2 %.

Typical Characteristics

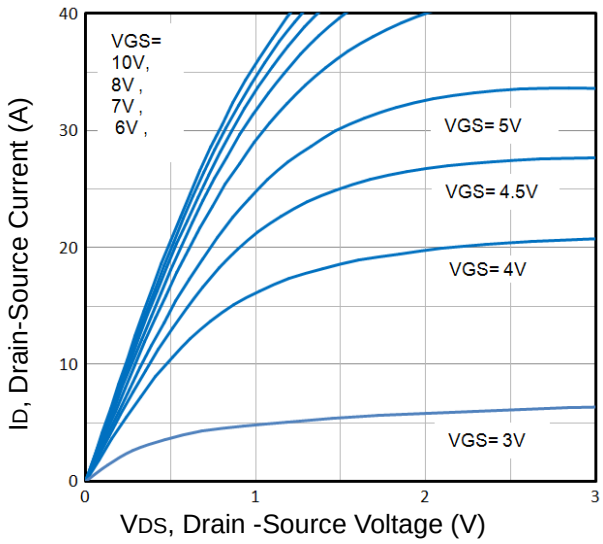


Fig1. Typical Output Characteristics

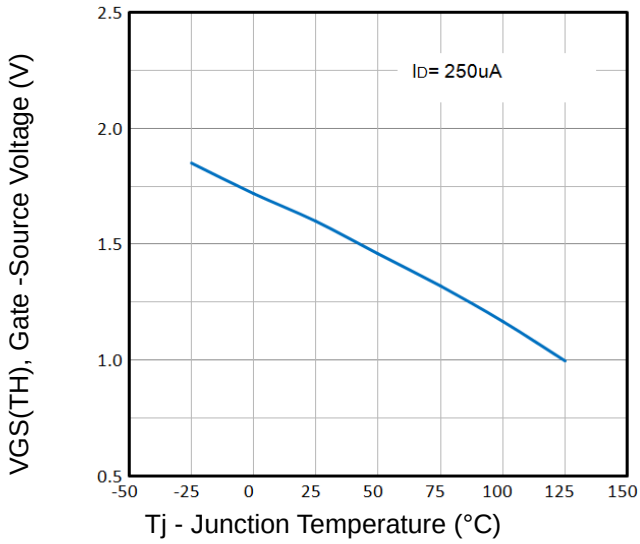


Fig2. Normalized Threshold Voltage Vs. Temperature

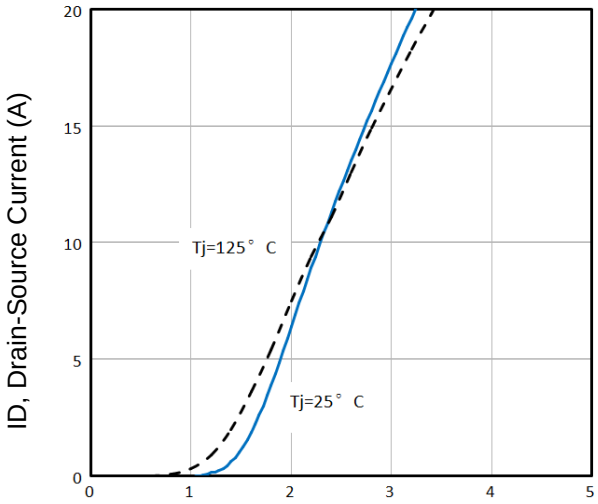


Fig3. Typical Transfer Characteristics

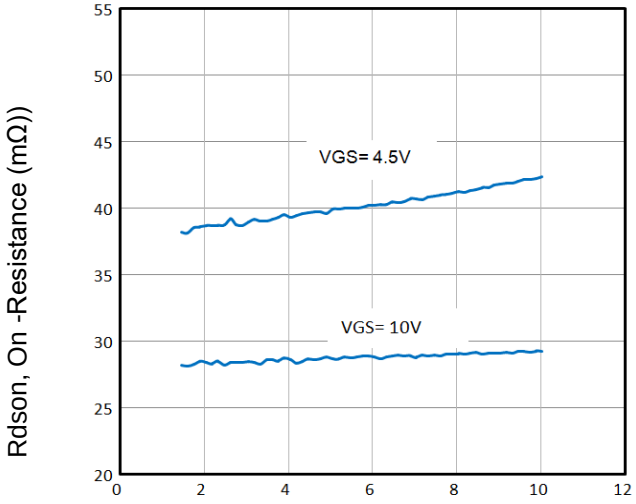


Fig4. On-Resistance vs. Drain Current and Gate

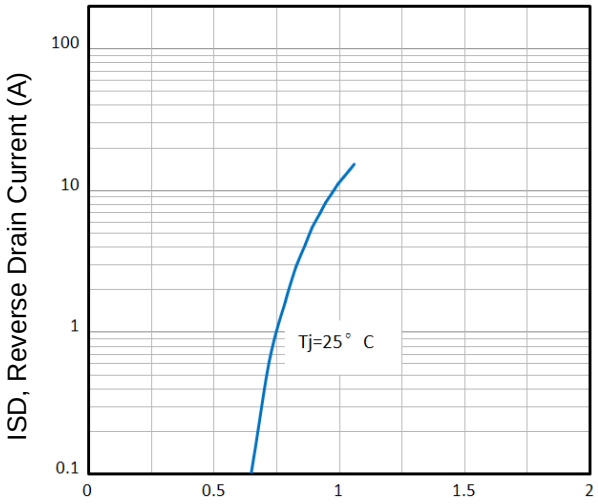


Fig5. Typical Source-Drain Diode Forward Voltage

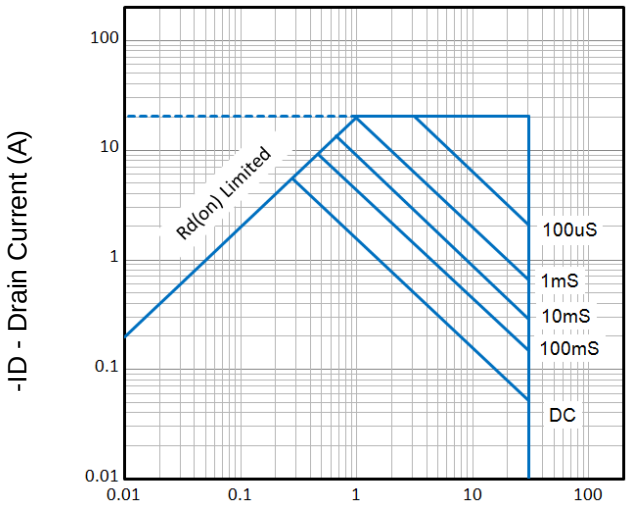


Fig6. Maximum Safe Operating Area

Typical Characteristics

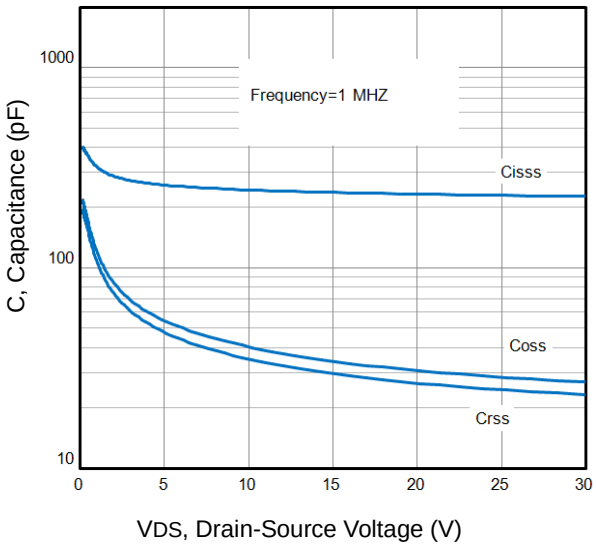


Fig7. Typical Capacitance Vs. Drain-Source Voltage

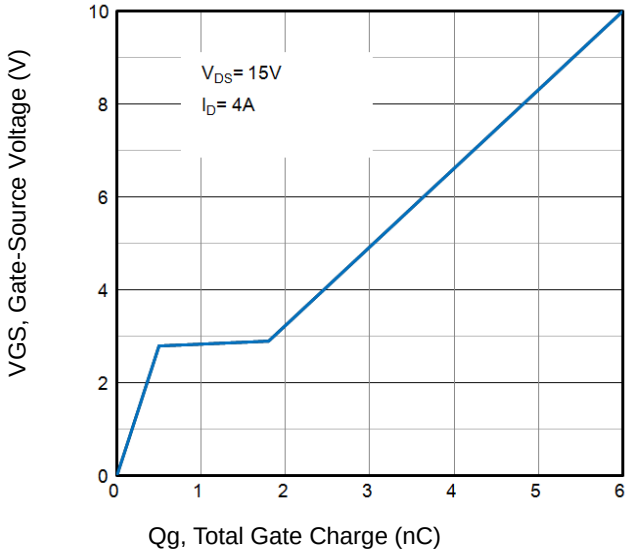


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

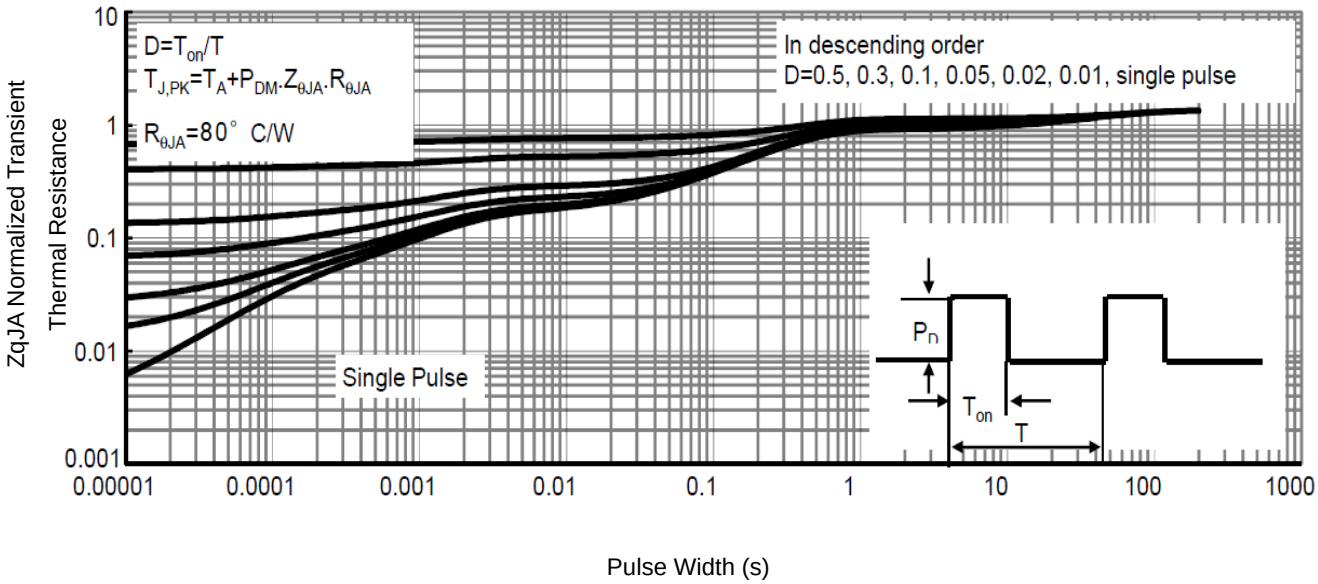


Fig9. Normalized Maximum Transient Thermal Impedance

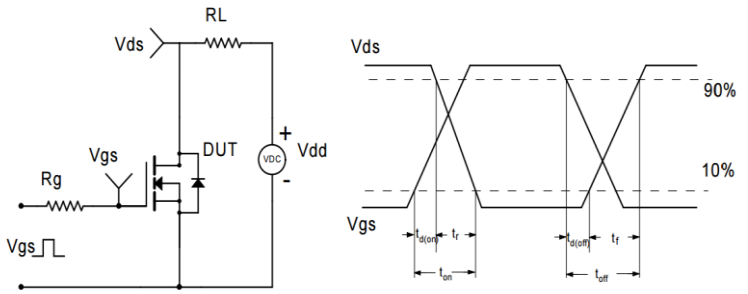
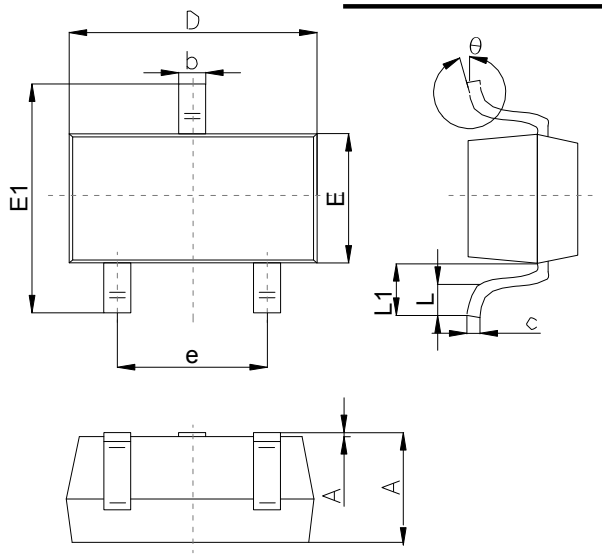


Fig10. Switching Time Test Circuit and waveforms

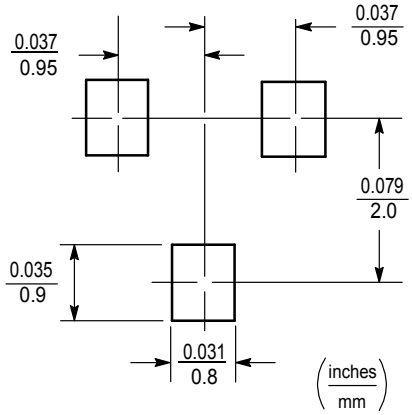
Outlitne Drawing

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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