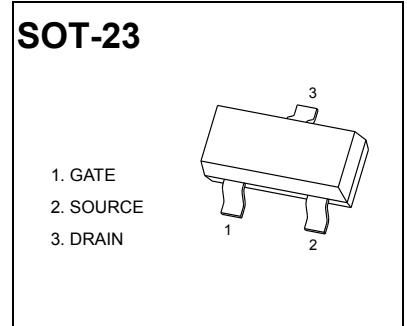
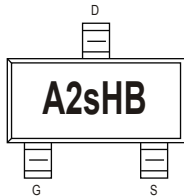
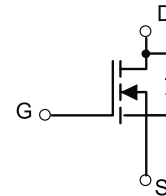


SOT-23 Plastic-Encapsulate MOSFETS
20V N-Channel Enhancement Mode MOSFET
VDS= 20V
RDS(ON), Vgs@ 4.5V, Ids@ 2.3A < 4.8m Ω
RDS(ON), Vgs@ 3.3V, Ids@ 2.3A < 5.5m Ω
Features

Advanced trench process technology

High Density Cell Design For Ultra Low On-Resistance


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}	20	V	
Gate-Source Voltage	V _{GS}	±10		
Continuous Drain Current	I _D	TA=25°C	2.3	A
		TA=70°C	1.8	
Maximum Power Dissipation ²⁾	P _D	TA=25°C	1.0	W
		TA=70°C	0.8	
Pulsed Drain Current ¹⁾	I _{DM}	9	A	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to 150	°C	
Thermal Resistance Junction-Ambient	R _{θJA}	125	°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 °C unless otherwise specified

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250uA	20			V
Drain-Source On-State Resistance ¹⁾	R _{DS(on)}	V _{GS} = 4.5V, I _D = 2.0A		48	60	mΩ
		V _{GS} = 2.5V, I _D = 1.0A		66	80	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250uA	0.4	0.6	1.0	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V			1	uA
Gate Body Leakage	I _{GSS}	V _{GS} =12V, V _{DS} = 0V			100	nA
Forward Transconductance ¹⁾	g _{fs}	V _{DS} = 5V, I _D = 2.3A		10	—	S
Dynamic						
Total Gate Charge	Q _g	V _{DS} = 10V, I _D = 2.3A V _{GS} = 4.5V		5.4		nC
Gate-Source Charge	Q _{gs}			0.65		
Gate-Drain Charge	Q _{gd}			1.6		
Turn-On Delay Time	t _{d(on)}	V _{DD} = 10V, R _L =5.5Ω I _D ≅ 2.3A, V _{GEN} = 4.5V R _G = 6Ω		12		ns
Turn-On Rise Time	t _r			36		
Turn-Off Delay Time	t _{d(off)}			34		
Turn-Off Fall Time	t _f			10		
Input Capacitance	C _{iss}	V _{DS} = 10V, V _{GS} = 0V f = 1.0 MHz		160		pF
Output Capacitance	C _{oss}			30		
Reverse Transfer Capacitance	C _{rss}			25		
Source drain current(Body Diode)	I _{SD}				1.5	A
Diode Forward Voltage	V _{SD}	I _S = 1.0A, V _{GS} = 0V		0.8	1.2	V

1) Pulse test: pulse width <= 300us, duty cycle<= 2%

Typical Characteristics

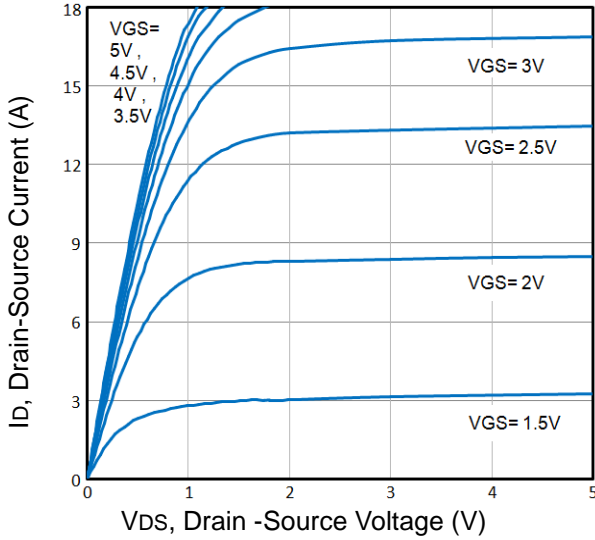


Fig1. Typical Output Characteristics

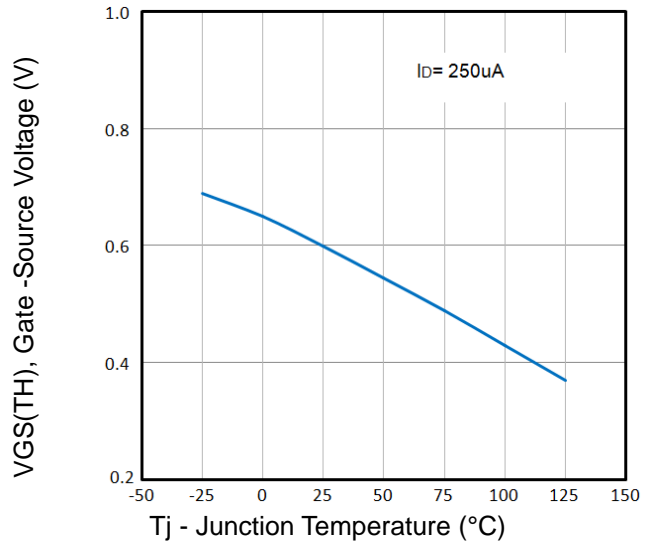


Fig2. Normalized Threshold Voltage Vs. Temperature

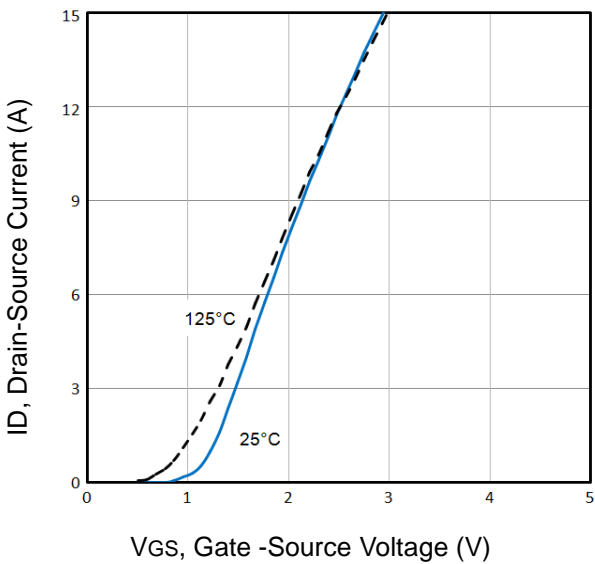


Fig3. Typical Transfer Characteristics

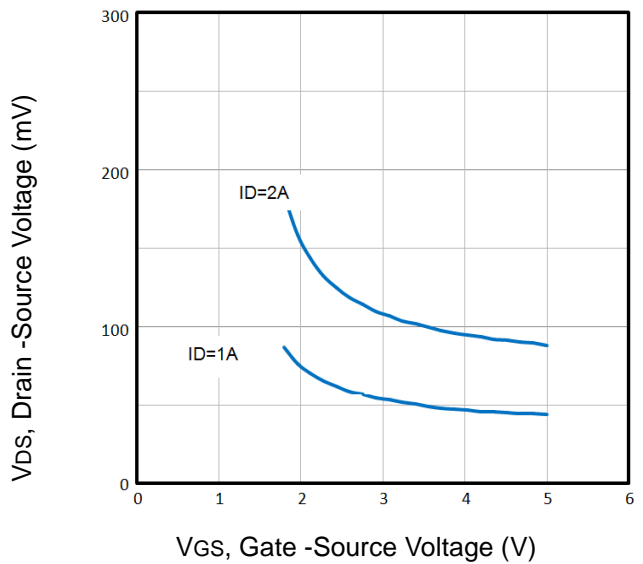


Fig4. Drain-Source Voltage vs Gate-Source Voltage

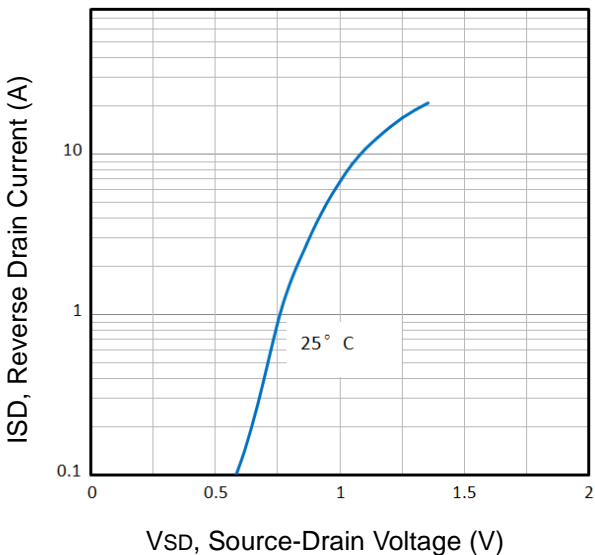


Fig5. Typical Source-Drain Diode Forward Voltage

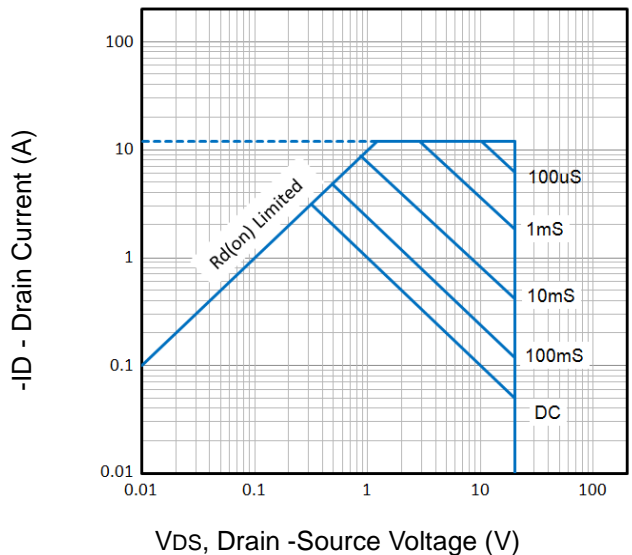


Fig6. Maximum Safe Operating Area

Typical Characteristics

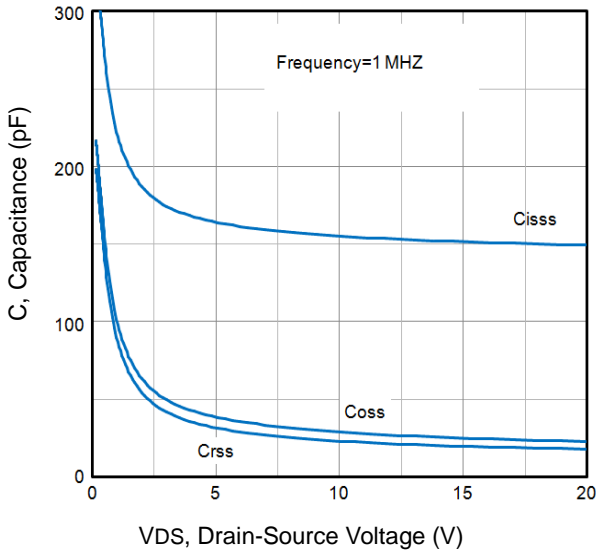


Fig7. Typical Capacitance Vs. Drain-Source Voltage

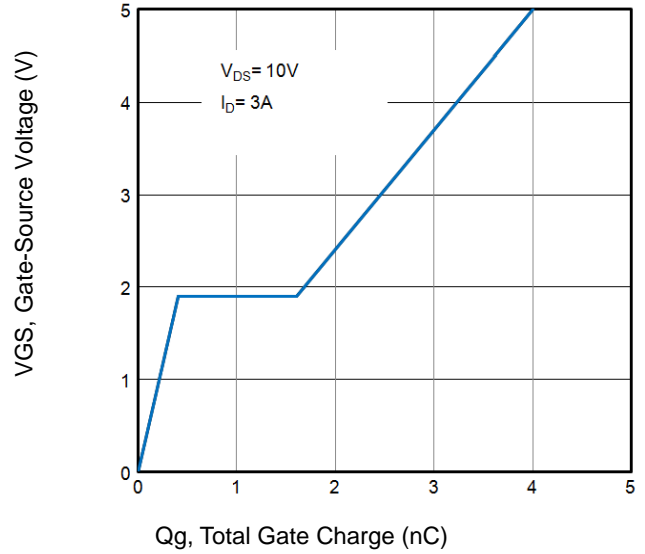


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

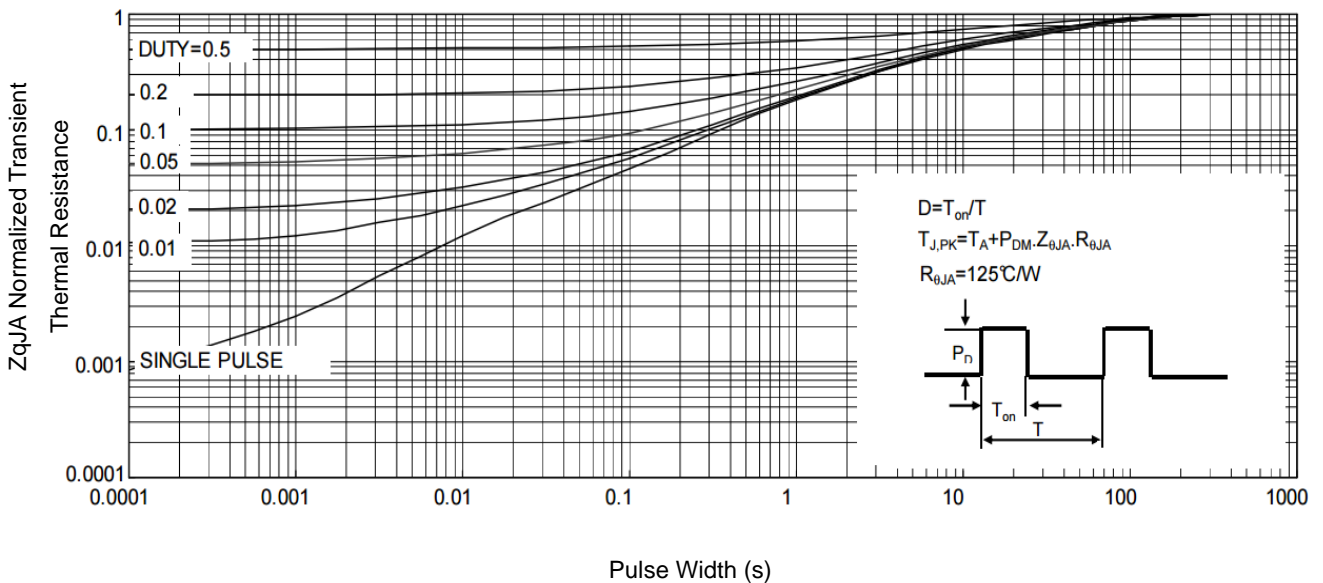


Fig9. Normalized Maximum Transient Thermal Impedance

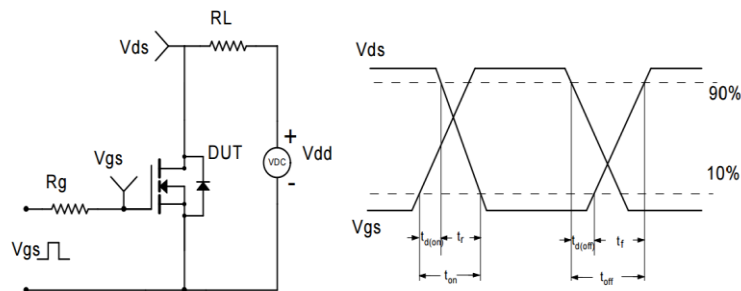
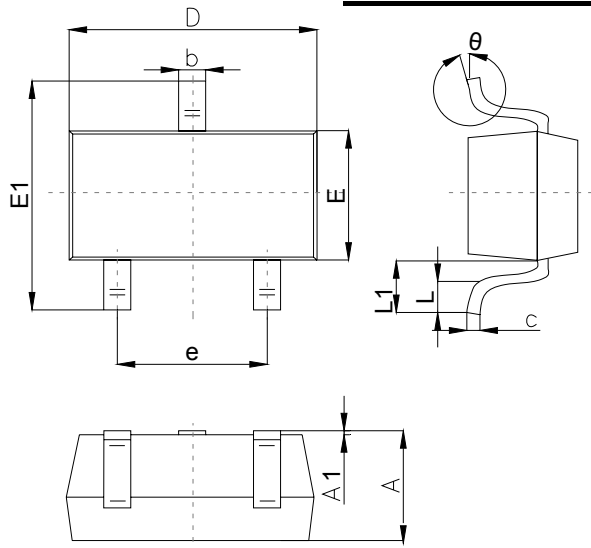


Fig10. Switching Time Test Circuit and waveforms

The curve above is for reference only.

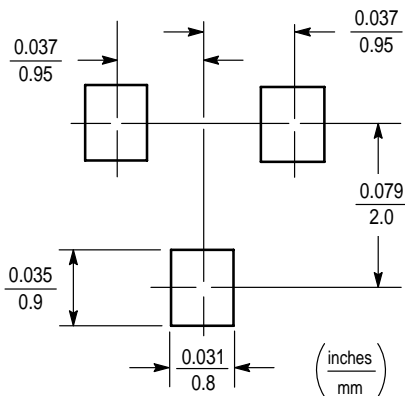
Outlitne Drawing

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.

Important Notice and Disclaimer

Microdiode Electronics (Jiangsu) reserves the right to make changes to this document and its products and specifications at any time without notice. Customers should obtain and confirm the latest product information and specifications before final design, purchase or use.

Microdiode Electronics (Jiangsu) makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, not does Microdiode Electronics (Jiangsu) assume any liability for application assistance or customer product design. Microdiode Electronics (Jiangsu) does not warrant or accept any liability with products which are purchased or used for any unintended or unauthorized application.

No license is granted by implication or otherwise under any intellectual property rights of Microdiode Electronics (Jiangsu).

Microdiode Electronics (Jiangsu) products are not authorized for use as critical components in life support devices or systems without express written approval of Microdiode Electronics (Jiangsu).