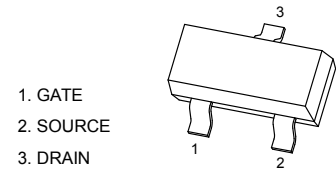


SOT-23 Plastic-Encapsulate MOSFETS

-12V P-Channel MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$ Typ	I_D Max
-12V	37mΩ@ -4.5V	-4.2A
	40mΩ@ -3.3V	

SOT-23



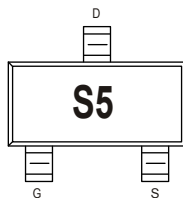
Features

Trench FET Power MOSFET

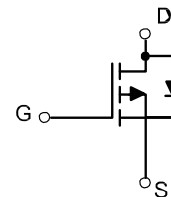
APPLICATION

- 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"	330	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	$T_A = 25^\circ\text{C}$ -4.2	A
		$T_A = 70^\circ\text{C}$ -2.8	
Pulsed Drain Current ¹⁾	I_{DM}	-16.8	A
Maximum Power Dissipation ²⁾	P_D	$T_A = 25^\circ\text{C}$ 1.25	W
		$T_A = 70^\circ\text{C}$ 1.0	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-50 to 150	°C
Junction-to-Ambient Thermal Resistance (PCB mounted) ²⁾	R_{thJA}	100	°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

$T_a = 25^\circ\text{C}$ 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	-20			V
Gate-source threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-0.4	-0.6	-1	
Gate-source leakage	I _{GSS}	V _{DS} =0V, V _{GS} =±10V			±100	nA
Zero gate voltage drain current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V			-1	μA
Drain-source on-state resistance ^a	R _{DS(on)}	V _{GS} =-4.5V, I _D =-4A		37	48	mΩ
		V _{GS} =-3.3V, I _D =-3.0A		40	55	
		V _{GS} =-2.5V, I _D =-2.0A		45	60	
Forward transconductance ^a	g _{fs}	V _{DS} =-5V, I _D =-2.8A	6.5			S
Dynamic ^b						
Input capacitance	C _{iss}	V _{DS} =-10V,V _{GS} =0V,f =1MHz		760		pF
Output capacitance	C _{oss}			94		
Reverse transfer capacitance	C _{rss}			76		
Total gate charge	Q _g	V _{DS} =-10V,V _{GS} =-4.5V,I _D =-3A		7.8		nC
Gate-source charge	Q _{gs}	V _{DS} =-10V,V _{GS} =-4.5V,I _D =-3A		0.9		
Gate-drain charge	Q _{gd}			1.8		
Turn-on delay time	t _{d(on)}	V _{DD} =-10V, R _L =1.2Ω, I _D =-2A, V _{GEN} =-4.5V,R _g =3.3Ω		5.5		ns
Rise time	t _r			3.9		
Turn-off delay time	t _{d(off)}			11.3		
Fall time	t _f			36		
Drain-source body diode characteristics						
Continuous source-drain diode current	I _S	T _C =25°C			-2.0	A
Body diode voltage	V _{SD}	I _S =-4A		-0.87	-1.2	V

a) Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

b) Guaranteed by design, not subject to production testing

Typical Characteristics

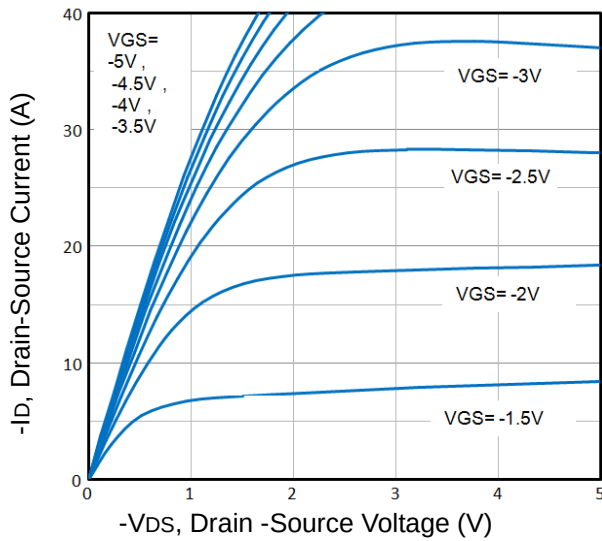


Fig1. Typical Output Characteristics

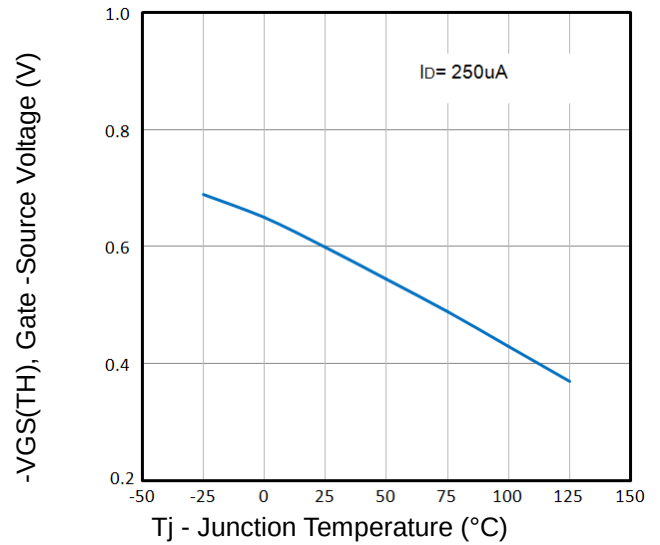


Fig2. Normalized Threshold Voltage Vs. Temperature

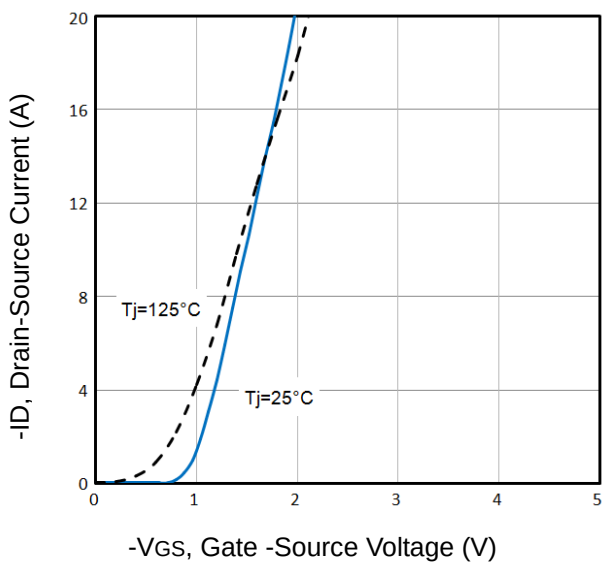


Fig3. Typical Transfer Characteristics

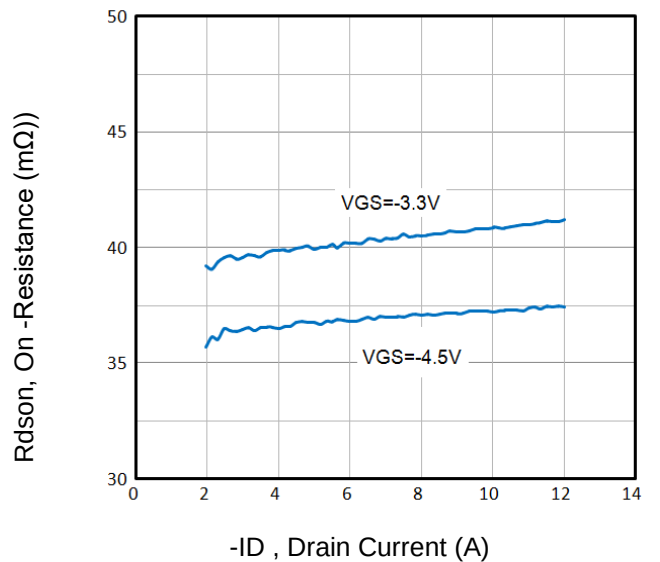


Fig4. On-Resistance vs. Drain Current and Gate Voltage

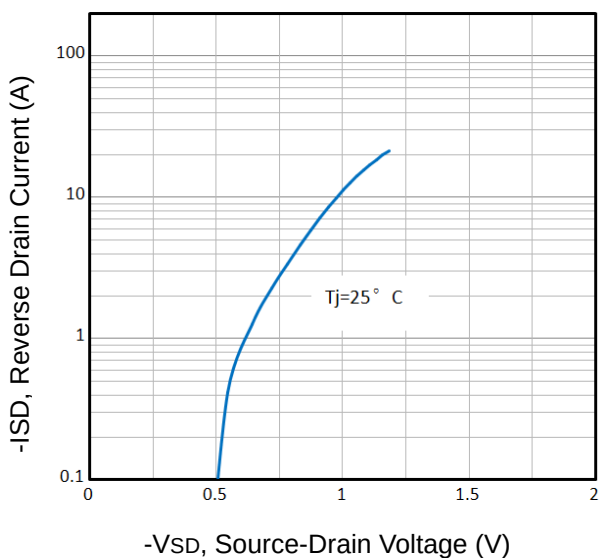


Fig5. Typical Source-Drain Diode Forward Voltage

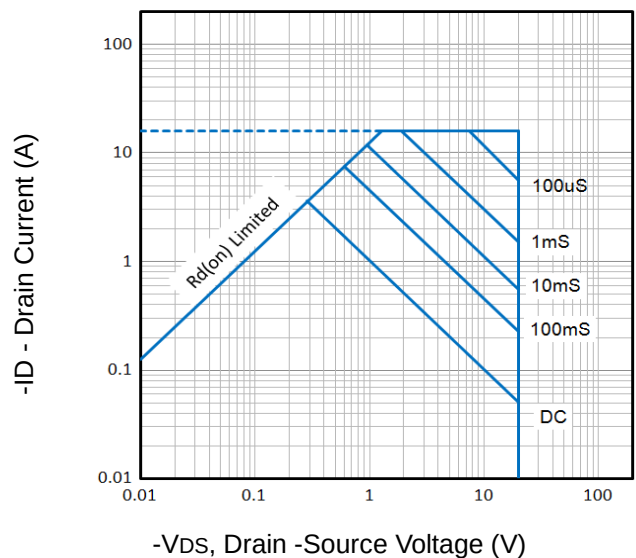
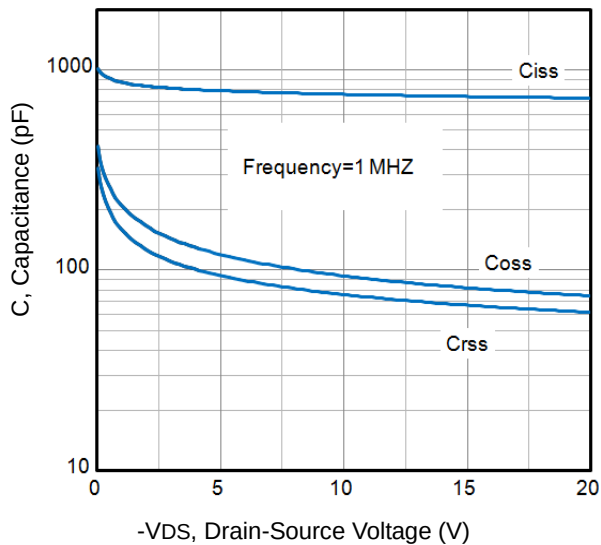
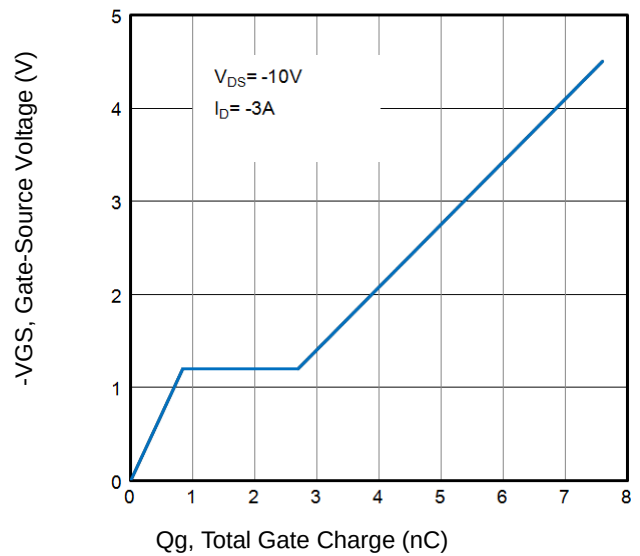
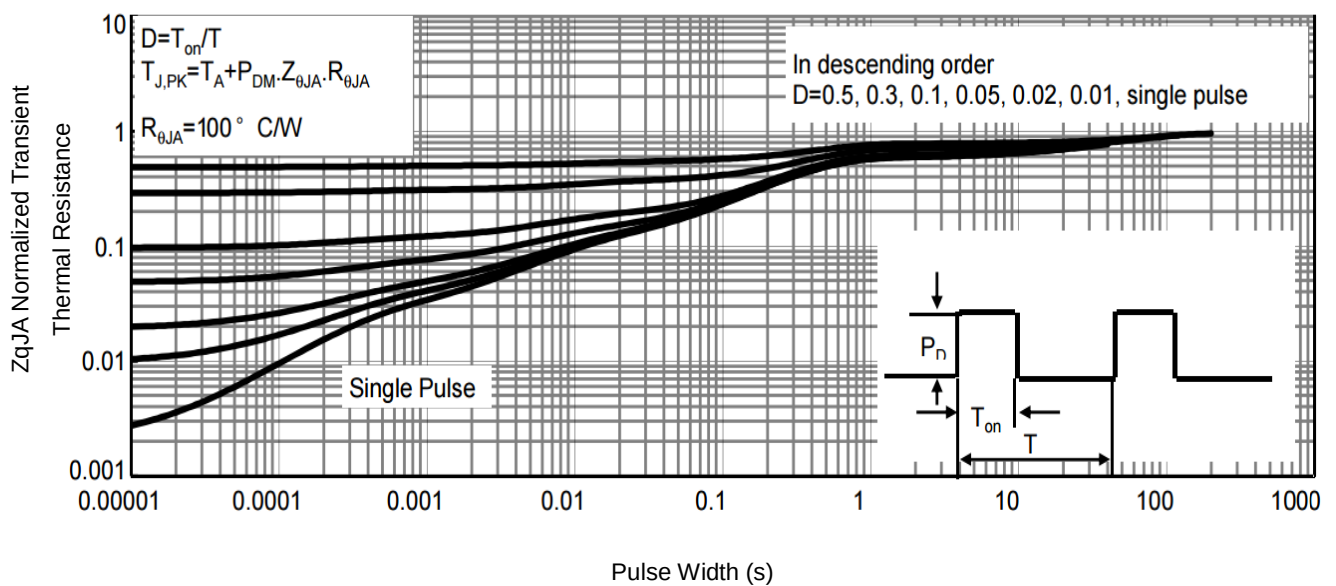
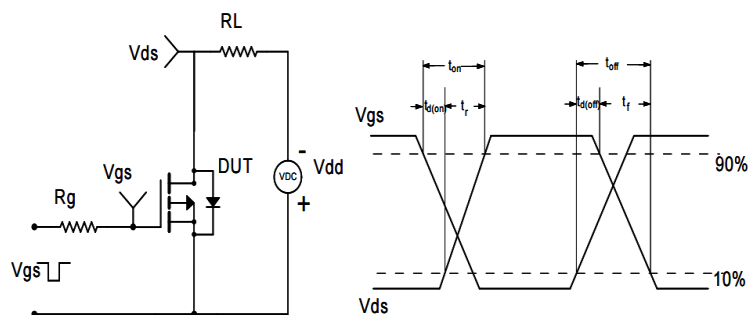


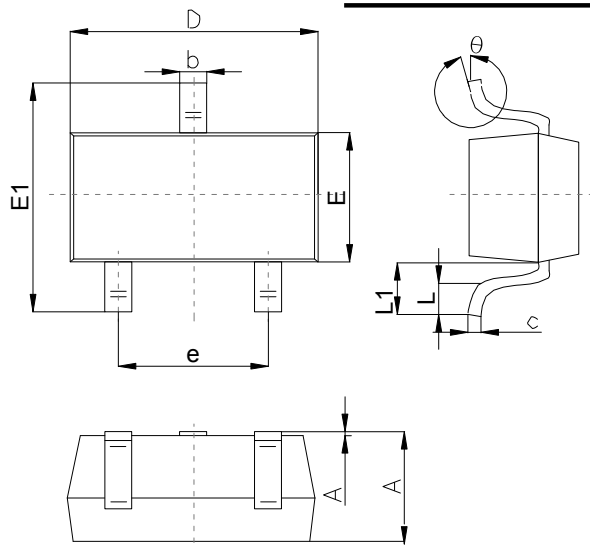
Fig6. Maximum Safe Operating Area

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

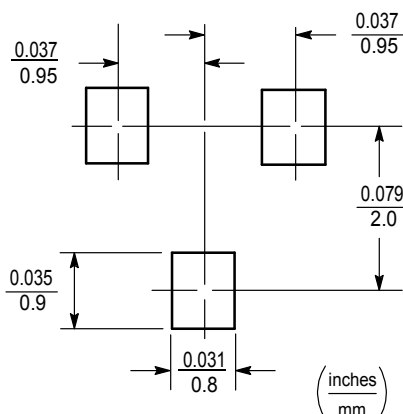
Outlitne Drawing

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

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