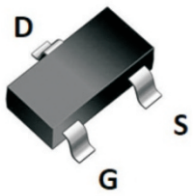
DESCRIPTION

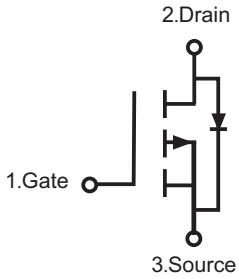
P-channel MOSFET

SOT-23



FEATURES

- -20V,-4.1A
  $R_{DS(ON)}$＜60mΩ@V_{GS}=-2.5V
  $R_{DS(ON)}$＜45mΩ@V_{GS}=-4.5V
- High power and current handing capability
- Surface mount package
- Pb free terminal plating
- RoHS compliant
- Halogen free



APPLICATION

- PWMApplications
- Load Switch
- Power Management

Absolute Maximum Ratings (TA=25°C, unless otherwise specified)

Parameter	Symbols	Ratings	Units
Drain-Source Voltage	V_{DSS}	-20	V
Gate-Source Voltage	V_{GSS}	±12	V
Continuous Drain Current	I_D	-4.1	A
Pulsed Drain Current (1)	I_{DM}	-20	A
Power Dissipation	P_D	1.0	W
Thermal Resistance - Junction to Case (2)	$R_{\theta JA}$	125	°C/W
Operation Junction Temperature and Storage Temperature	T_j, T_{stg}	-55~+150	°C

Notes:

1. Repetitive Rating:Pulse width limited by maximum junction temperature.
2. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance ,where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design, while $R_{\theta JA}$ is determined by the board design, The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.

Electrical Characteristics (TA=25°C, unless otherwise specified)

Parameter	Symbols	Text conditions	Min	Typ	Max	Units
Static Characteristics						
Drain-Source Breakdown Voltage	B_{VDSS}	V_{GS}=0V,I_D=-250uA	-20			V
Gate-Body Leakage Current	I_{GSS}	V_{GS} =±12V,V_{DS}=0V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =-20V,V_{GS}= 0V			-1	uA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250uA	-0 .45	-0.7	-1.0	V
Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V,I_D=-4.1A		34	45	mΩ
		V_{GS}=-2.5V,I_D= -3A		44	60	mΩ
Forward Transconductance	g_{FS}	V_{DS}=-5V, I_D =-4.1A		6		S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=-4V, V_{GS}=0V, f=1.0MHz		740		pF
Output Capacitance	C_{oss}			290		pF
Reverse Transfer Capacitance	C_{rss}			190		pF
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=-4 V,R_L=-1.2Ω , V_{GEN}=-4.5V,R_G=1 Ω		12		ns
Turn-On Rise Time	t_r			35		ns
Turn-Off Delay Time	$t_{d(off)}$			30		ns
Turn-Off Fall Time	t_f			10		ns
Total Gate Charge	Q_g	V_{DS}=-4 V, V_{GS}=-4.5V, I_D=-4.1A		7.8		nC
Gate-Source Charge	Q_{gs}			1.2		nC
Gate-Drain Charge	Q_{gd}			1.6		nC
Source-Drain Diode Characteristics						
Diode Forward Current	I_S				-4.1	A
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=-4.1A			-1.2	V

Typical Performance Characteristics

Figure1: Output Characteristics

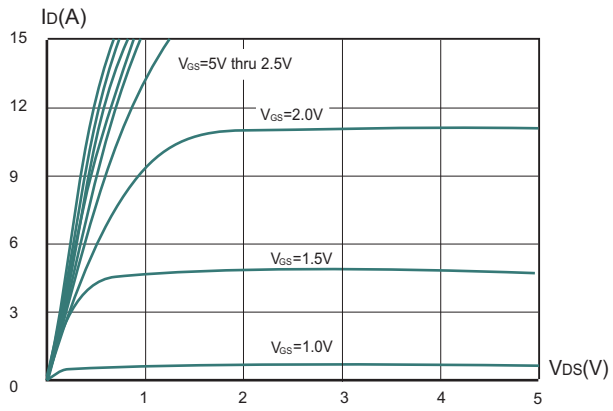


Figure 2: Drain-Source On-Resistance

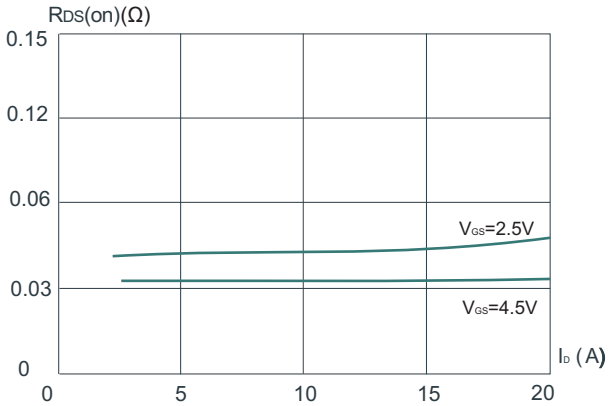


Figure3: Transfer Characteristics

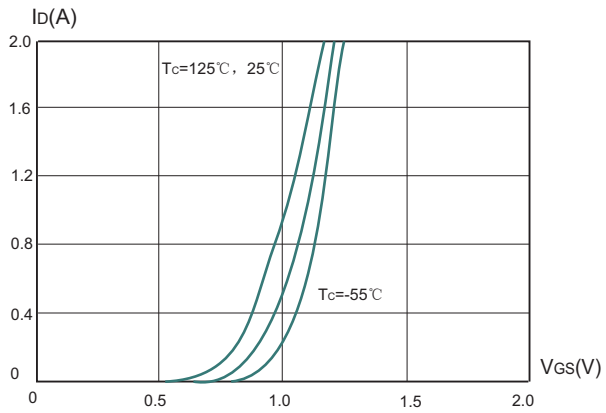


Figure 4: Drain-Source On-Resistance

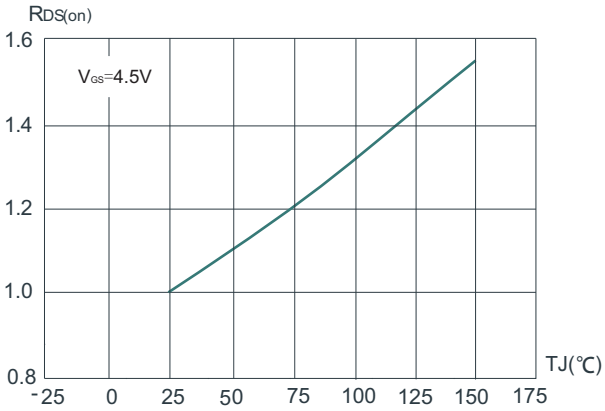


Figure 5:RDSON VS VGS

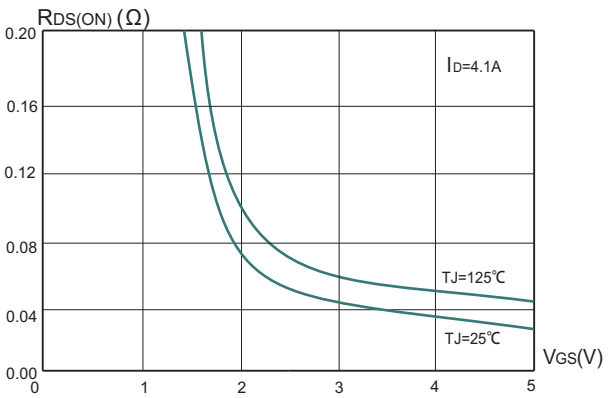


Figure 6: Capacitance VS VDS

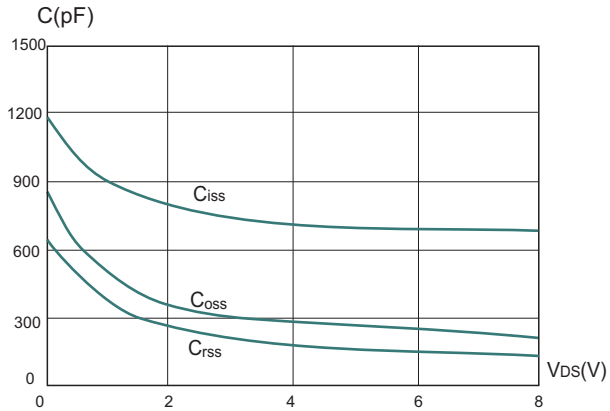


Figure 7: Gate Charge

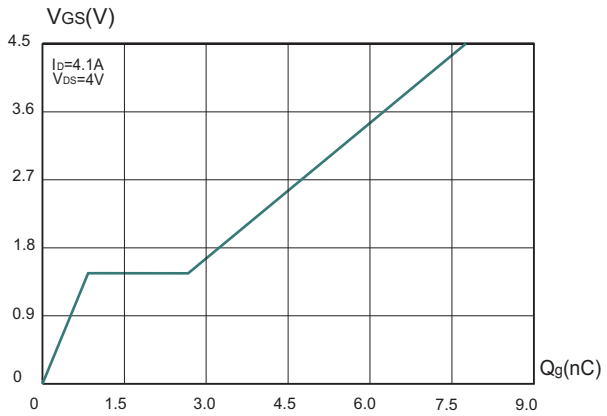


Figure8 : Source-Drain Diode Forward

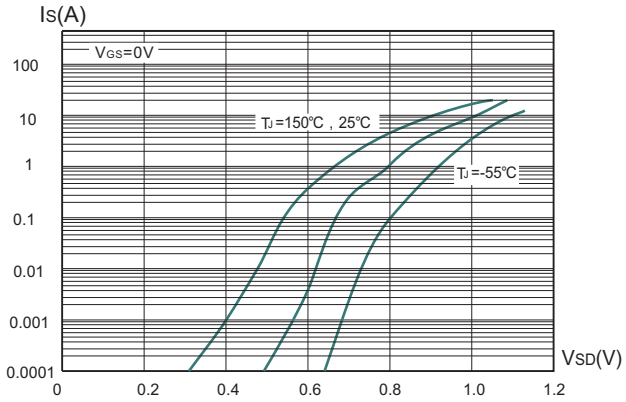
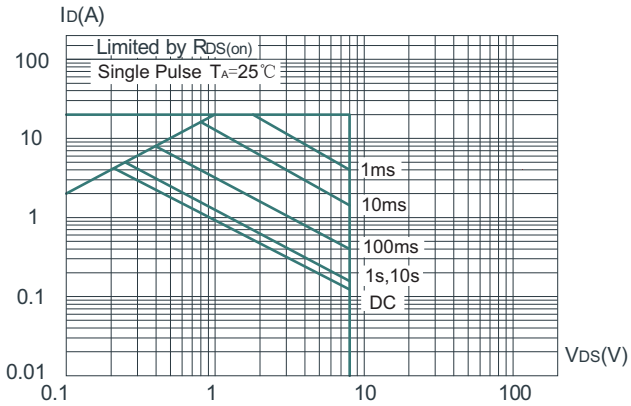
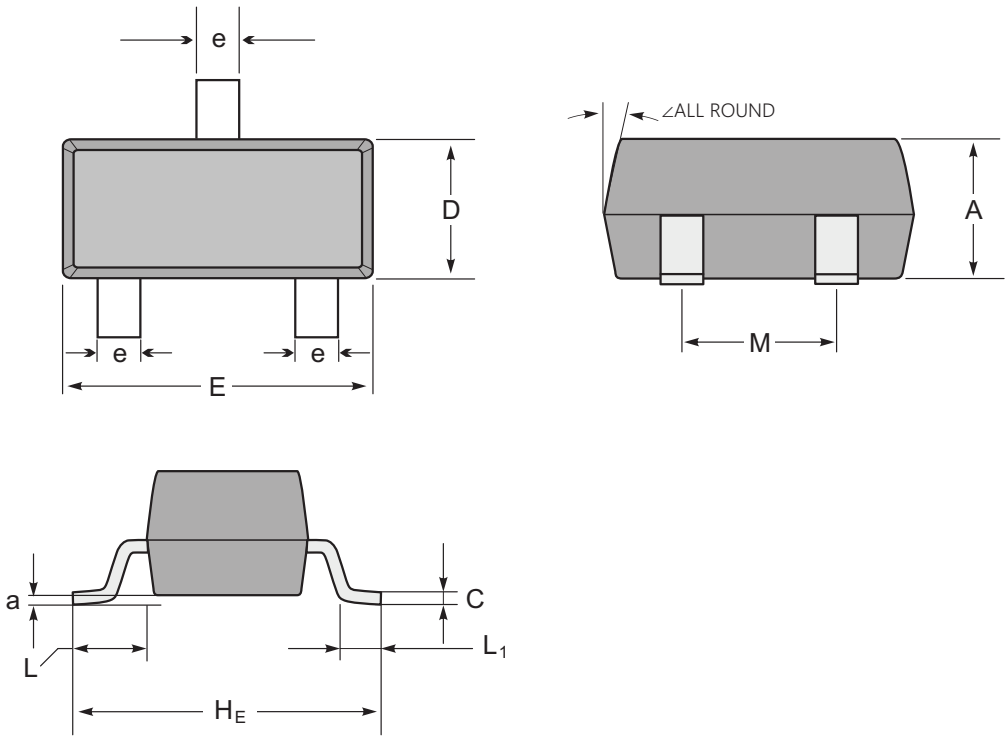


Figure 9 : Safe Operating Area



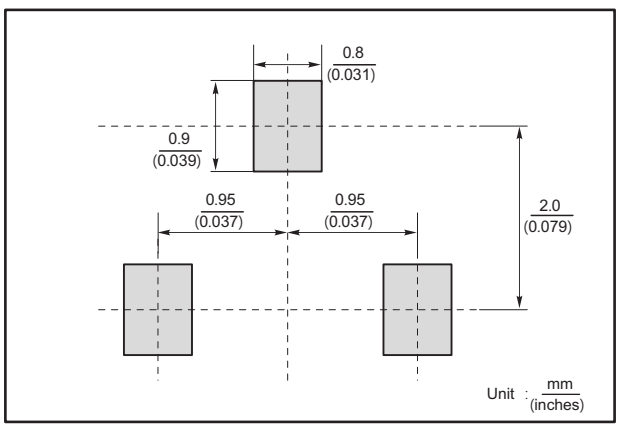
SOT-23 Package Outline Dimensions



SOT-23 mechanical data

UNIT		A	C	D	E	HE	e	M	L	L1	a	∠
mm	max	1.1	0.20	1.4	3.0	2.6	0.6	1.95	0.55 (ref)	0.36 (ref)	0.15	12°
	min	0.9	0.08	1.2	2.8	2.2	0.35	1.7			0.0	
mil	max	43	7.9	55	118	102	24	77	22 (ref)	14 (ref)	6	
	min	35	3.1	47	110	87	13	67			0.0	

The recommended mounting pad size



Marking

Type number	Marking code
PM2305	2305