

B

2020-10-29

7

5A1P30

3411

/ Descriptions

SOT23-6 P MOS

P-channel MOSFET in a SOT23-6 Plastic Package

/ Features

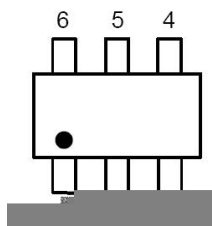
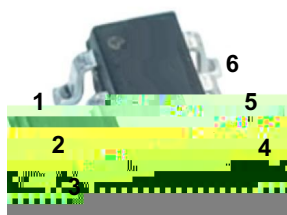
 $V_{DS}(V) = -30V$ $I_D = -4.2A (V_{GS} = -10V)$ $R_{DS(ON)} < 50m\Omega (V_{GS} = -10V)$ $R_{DS(ON)} < 65m\Omega (V_{GS} = -4.5V)$

/ Applications

This device is suitable for use as a load switch or in PWM applications.

/ Equivalent Circuit

/ Pinning



PIN1	D	PIN 2	D	PIN 3	G	PIN 4	S	PIN 5	D	PIN 6	D
------	---	-------	---	-------	---	-------	---	-------	---	-------	---

/ Marking

See Marking Instructions

/ Absolute Maximum Ratings($T_a=25^\circ\text{C}$)

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Drain-Source Voltage	V_{DS}	-30	V
Drain Current – Continuous	$I_D(T_a=25^\circ\text{C})$	-4.2	A
Drain Current- Continuous ^A	$I_D(T_a=70^\circ\text{C})$	-3.5	A
Pulsed Drain Current ^B	I_{DM}	-30	A
Gate-Source Voltage	V_{GS}	± 12	V
Maximum Power Dissipation ^A	$P_D(T_a=25^\circ\text{C})$	1.4	W
Total Power Dissipation ^A	$P_D(T_a=70^\circ\text{C})$	1.0	W
Maximum Junction-to-Ambient ^(Note 1)	$R_{\theta JA}$	125	$^\circ\text{C/W}$
Maximum Junction-to-Lead ^C	$R_{\theta JL}$	60	$^\circ\text{C/W}$
Junction and Storage Temperature Range	T_j, T_{stg}	-55 ~ 150	$^\circ\text{C}$

/ Electrical Characteristics($T_a=25^\circ\text{C}$)

参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Drain-Source Breakdown Voltage	$V_{(BR)DS}$	$V_{GS}=0V$ $I_D=-250\mu A$	-30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-24V$ $V_{GS}=0V$ $T_j=25^\circ\text{C}$			-1	μA
		$V_{DS}=-24V$ $V_{GS}=0V$ $T_j=55^\circ\text{C}$			-5	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 12V$ $V_{DS}=0V$			± 0.1	μA
On-State Drain Current	$I_{D(on)}$	$V_{GS}=-4.5V$ $V_{DS}=-5V$	-25			A
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=-250\mu A$	-1.0		-2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V$ $I_D=-4.2A$		37	50	m Ω
	$R_{DS(on)}$	$V_{GS}=-10V$ $I_D=-4.2A$ $T_j=125^\circ\text{C}$			75	
	$R_{DS(on)}$	$V_{GS}=-4.5V$ $I_D=-4A$		58	65	
Forward Transconductance	g_{FS}	$V_{DS}=-5V$ $I_D=-5A$	7	11		S
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_S=-1A$		-0.75	-1.0	V

/ Electrical Characteristics($T_a=25^\circ\text{C}$)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Capacitance	C_{iss}	$V_{DS}=-15\text{V}$ $V_{GS}=0\text{V}$ $f=1\text{MHz}$		957		pF
Output Capacitance	C_{oss}			115		
Reverse Transfer Capacitance	C_{rss}			77		
Gate resistance	R_g	$V_{GS}=0\text{V}$ $V_{DS}=0\text{V}$, $f=1\text{MHz}$		6		Ω
Total Gate Charge	Q_g	$V_{GS}=-4.5\text{V}$ $V_{DS}=-15\text{V}$ $I_D=-4\text{A}$		9.4		nC
Gate Source Charge	Q_{gs}			2		
Gate Drain Charge	Q_{gd}			3		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=-10\text{V}$ $R_L=3.6\Omega$ $V_{DS}=-15\text{V}$ $R_{GEN}=6\Omega$		6.3		ns
Turn-On Rise Time	t_r			3.2		
Turn-Off Delay Time	$t_{d(off)}$			38.2		
Turn-Off Fall Time	t_f			12		
Body Diode Reverse Recovery Time	t_{rr}	$I_F=-4\text{A}$, $dI/dt=100\text{A}/\mu\text{s}$		20.2		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$I_F=-4\text{A}$, $dI/dt=100\text{A}/\mu\text{s}$		11.2		nC

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The value in any given application depends on the user's specific board design. The current rating is based on the $t \leq 10\text{s}$ thermal resistance rating.

B: Repetitive rating, pulse width limited by junction temperature.

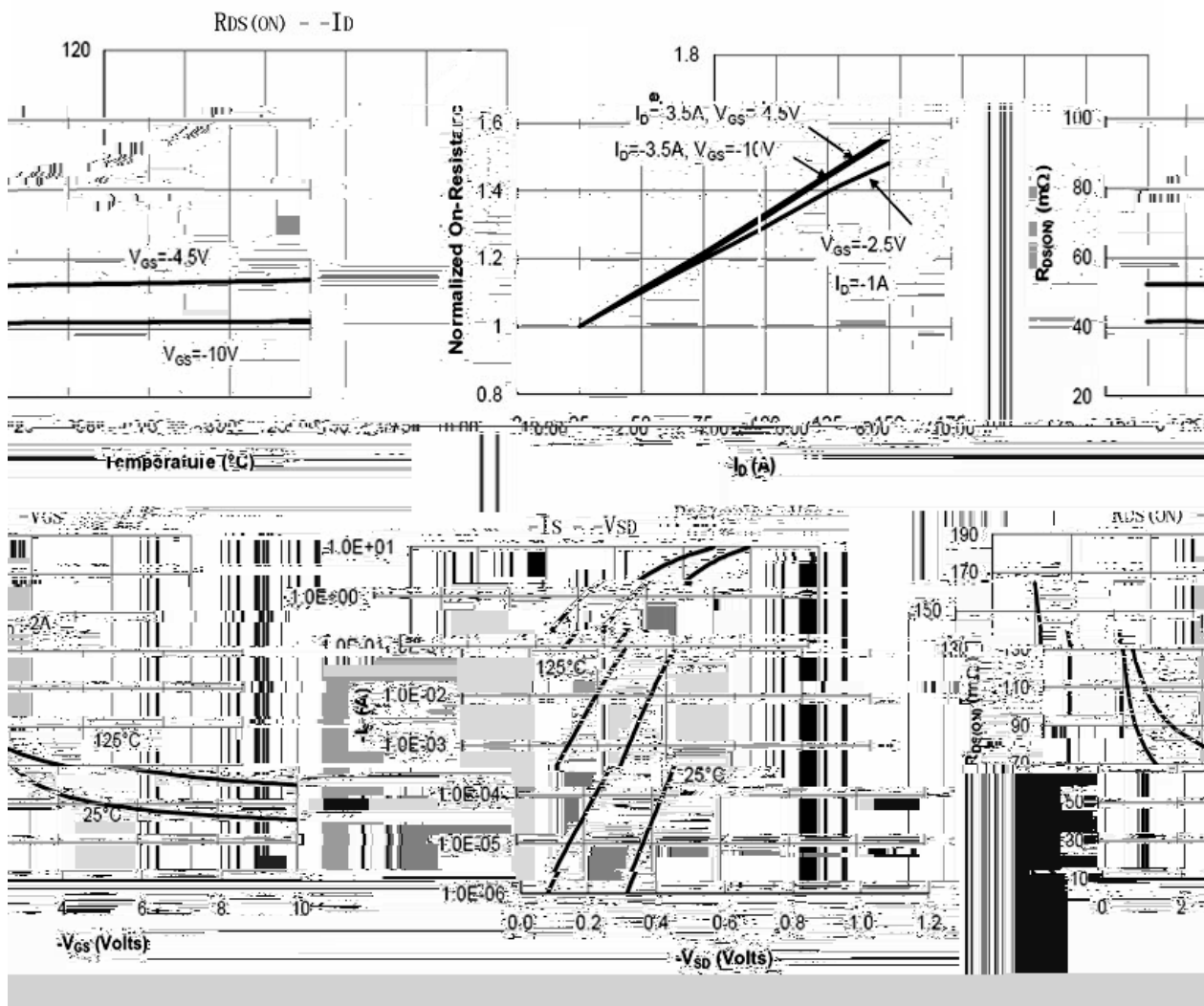
C. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to lead $R_{\theta JL}$ and lead to ambient.

D. The static characteristics in Figures 1 to 6,12,14 are obtained using $80\mu\text{s}$ pulses, duty cycle 0.5% max.

E. These tests are performed with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The SOA curve provides a single pulse rating.

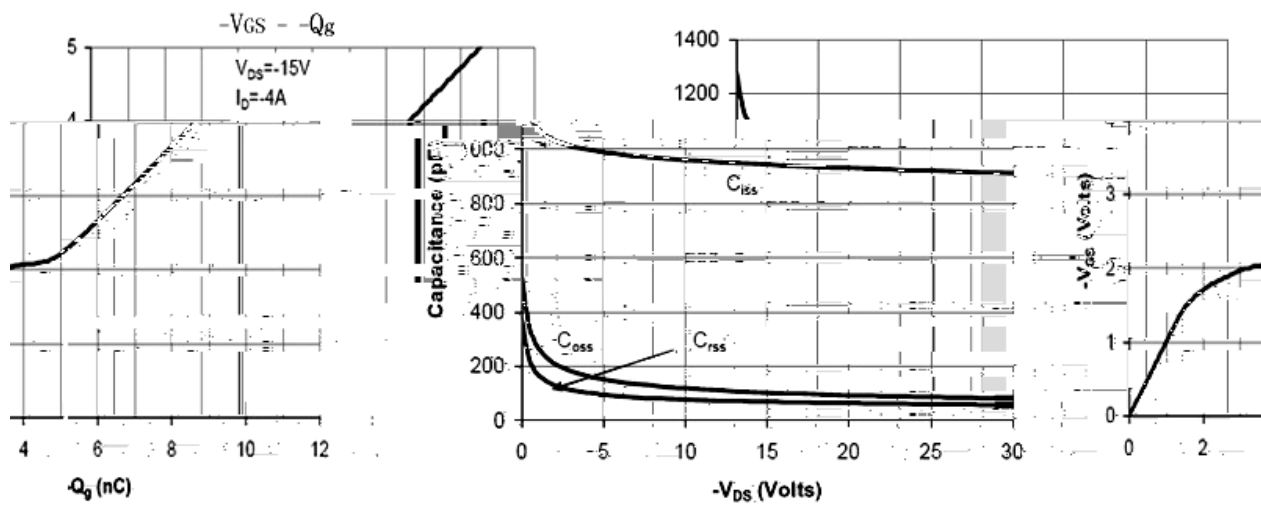


/ Electrical Characteristic Curve

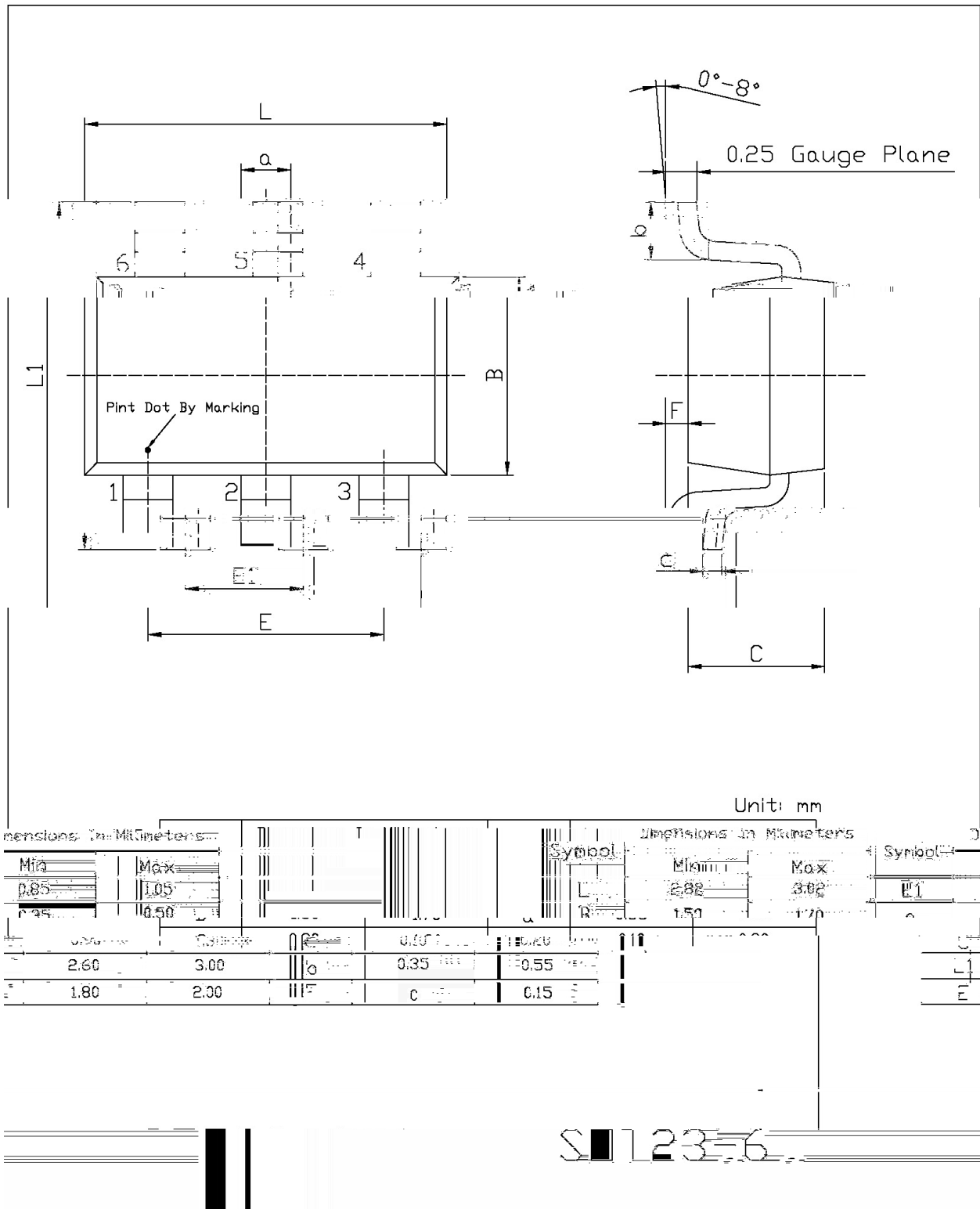




/ Electrical Characteristic Curve



/ Package Dimensions



//

o

