



PRODUCT DATA SHEET



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Datasheet



Resources

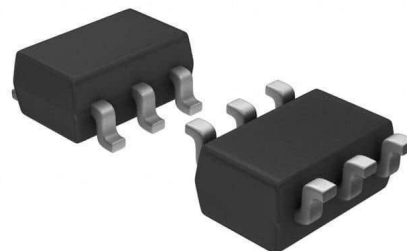


Samples

Please note: Please check the JINGAO Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.jg-semi.cn. Please email any questions regarding the system integration to JINGAO_questions@jgsemi.com.

FEATURES

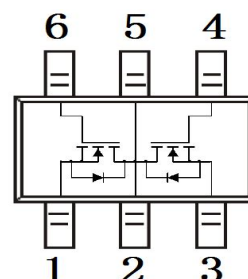
- Low on-resistance: $V_{DS}=20V, I_D=5A, R_{DS(ON)} \leq 25m\Omega @ V_{GS}=4.5V$
- Low gate charge
- For synchronous rectifier applications
- Surface Mount device



SOT-23-6

MECHANICAL DATA

- Case: SOT-23-6
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Weight: 0.3 grams (approximate)



MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	20	V
Gate-source voltage	V_{GS}	± 12	V
Continuous drain current @ $T_A = 25^\circ\text{C}$	I_D	5	A
Pulsed drain current	I_{DM}	25	A
Power dissipation	P_D	1.25	W
Thermal resistance from Junction to ambient	$R_{\theta JA}$	100	$^\circ\text{C/W}$
Junction and Storage temperature Range	T_J, T_{STG}	-55 ~ +150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
STATIC CHARACTERICTISCS						
Drain-Source breakdown voltage	V _{(BR)DSS} *	20			V	V _{GS} =0V, I _D =250μA
Zero gate voltage drain current	I _{DSS} *			1	μA	V _{DS} =16V, V _{GS} =0V
Gate-body leakage current	I _{GSS} *			±100	nA	V _{DS} =0V, V _{GS} =±12V
Gate-threshold voltage	V _{GS(th)} *	0.5	0.8	1.0	V	V _{DS} =V _{GS} , I _D =250μA
Drain-source on-resistance	R _{DS(ON)} *		22	25	mΩ	V _{GS} =4V, I _D =5A
			38	40	mΩ	V _{GS} =2.5V, I _D =4A
Forward transconductance	g _{FS}		13		S	V _{DS} =5V, I _D =5A
DRAIN-SOURCE DIODE CHARACERISTICS						
Diode forward voltage	V _{SD}	0.42		1.28	V	I _S =1.7A, V _{GS} =0V
DYNAMIC CHARACTERICTISCS						
Input capacitance	C _{iss}		800		pF	V _{DS} =8V, V _{GS} =0V, f=1MHz
Output capacitance	C _{oss}		155		pF	
Reverse transfer capacitance	C _{rss}		125		pF	
SWITCHING CHARACTERICTISCS						
Total gate charge	Q _g		11		nC	V _{GS} =4V,V _{DS} =10V,I _D =4A
Gate-source charge	Q _{gs}		2.2		nC	
Gate-drain charge	Q _{gd}		2.5		nC	
Turn-on delay time	t _{d(on)}		18.3		nS	V _{DD} =10V, I _D =1.0A,V _{GEN} =4V, R _{GEN} =10Ω,R _L =10Ω
Turn-on rise time	t _r		4.8		nS	
Turn-off delay time	t _{d(off)}		43.5		nS	
Turn-off fall time	t _f		20		nS	

*Pulse test ; Pulse width<300μs, Duty cycle ≤2% .

Typical Characteristics

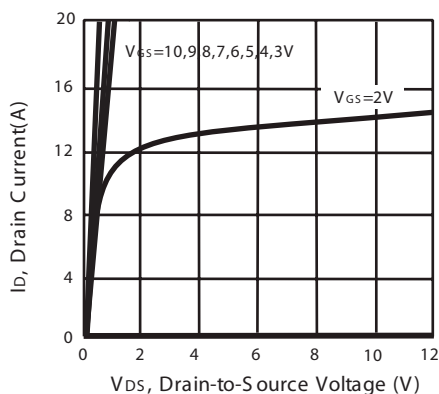


Figure 1. Output Characteristics

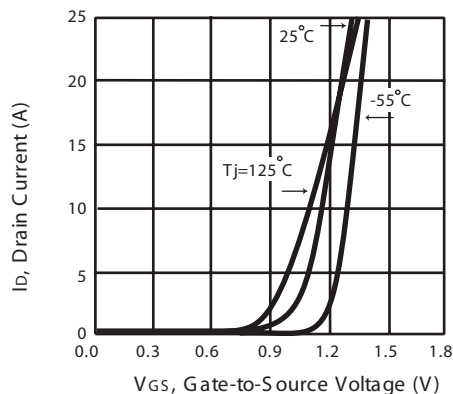


Figure 2. Transfer Characteristics

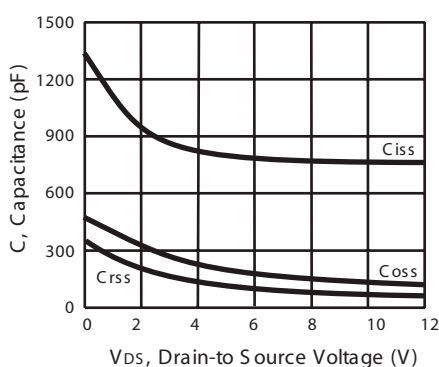


Figure 3. Capacitance

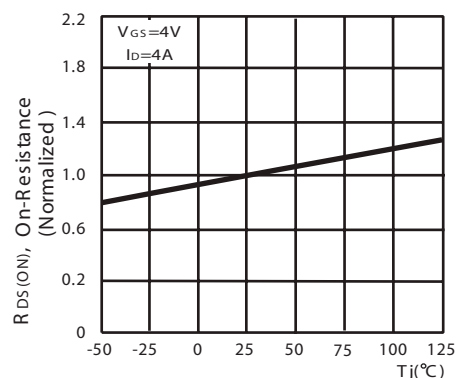


Figure 4. On-Resistance Variation with Temperature

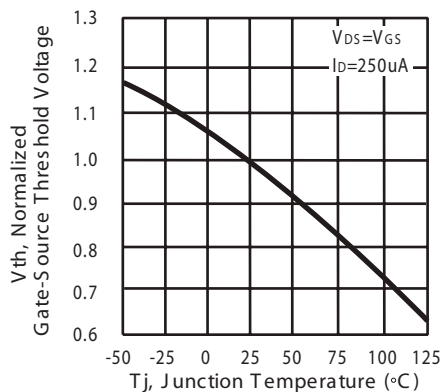


Figure 5. Gate-Source Threshold Voltage with Temperature

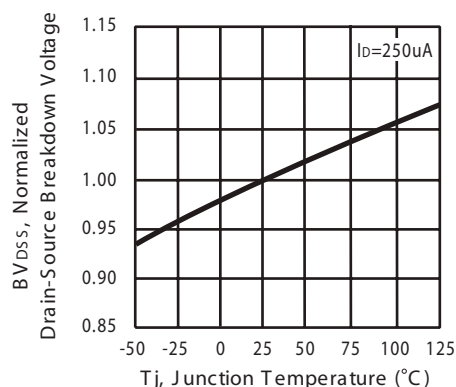


Figure 6. Breakdown Voltage Variation with Temperature

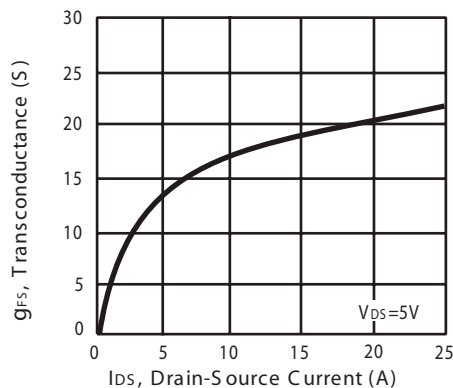


Figure 7. Transconductance Variation with Drain Current

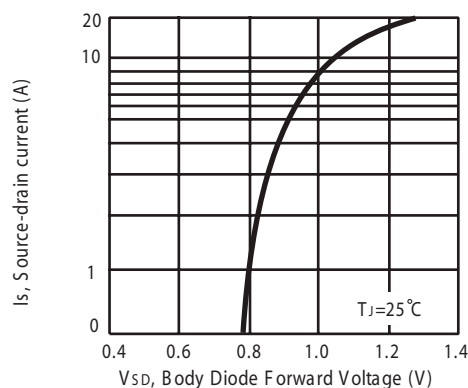


Figure 8. Body Diode Forward Voltage Variation with Source Current

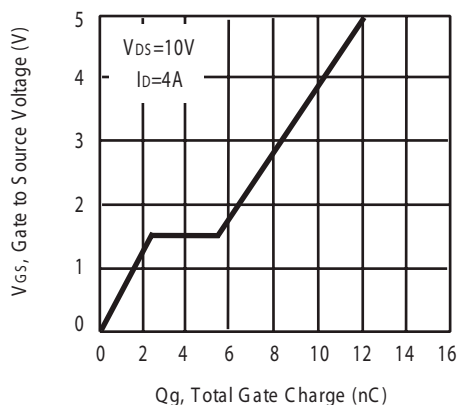


Figure 9. Gate Charge

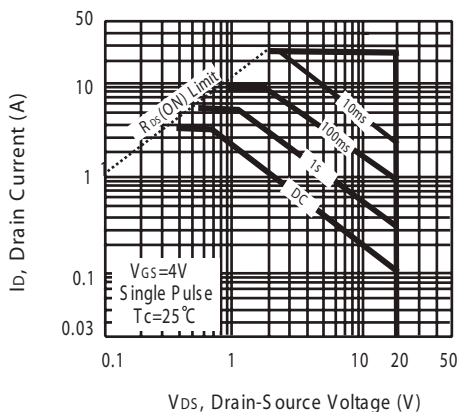


Figure 10. Maximum Safe Operating Area

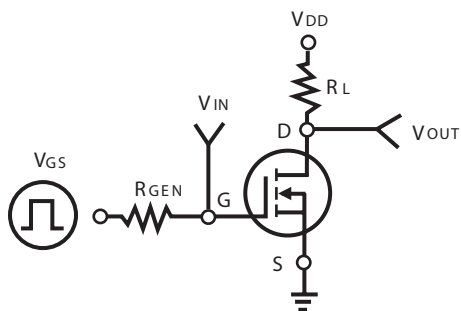


Figure 11. Switching Test Circuit

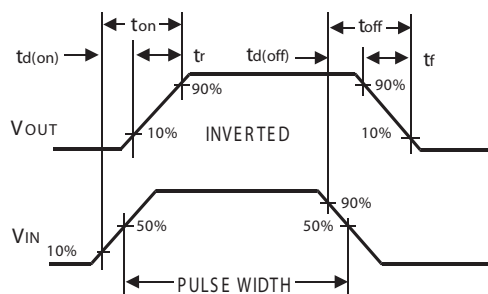
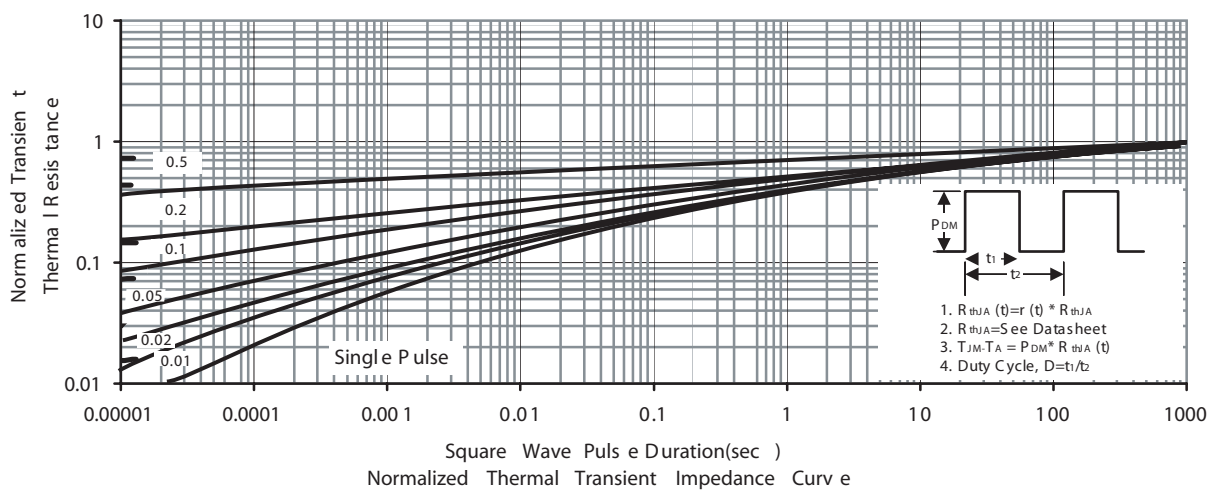
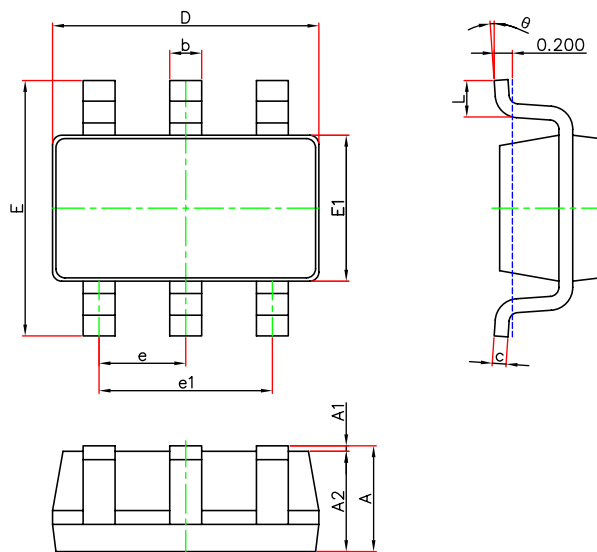
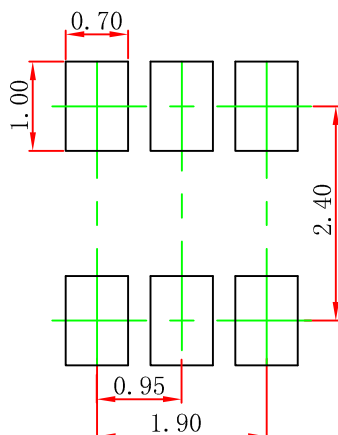


Figure 12. Switching Waveforms



SOT-23-6 Package Outline Dimensions


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

SOT-23-6 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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