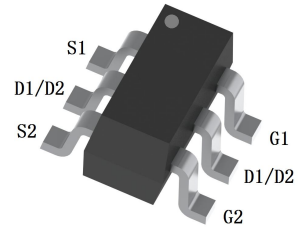
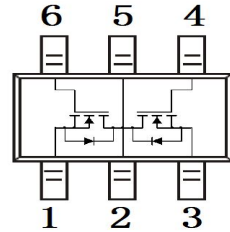


**Dual N-Channel Enhancement Mode Field Effect Transistor**
**FEATURES**

- 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 ( $T_A = 25^\circ C$  unless otherwise noted)**

Parameter	Symbol	Value	Unit
Drain-source voltage	$V_{DS}$	20	V
Gate-source voltage	$V_{GS}$	$\pm 12$	V
Continuous drain current @ $T_A = 25^\circ C$	$I_D$	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	$^\circ C/W$
Junction and Storage temperature Range	$T_J, T_{STG}$	-55 ~ +150	$^\circ C$

**ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ C$  unless otherwise specified)**

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
<b>STATIC CHARACTERISTICS</b>						
Drain-Source breakdown voltage	$V_{(BR)DSS}^*$	20			V	$V_{GS}=0V, I_D=250\mu A$
Zero gate voltage drain current	$I_{DSS}^*$			1	$\mu A$	$V_{DS}=16V, V_{GS}=0V$
Gate-body leakage current	$I_{GSS}^*$			$\pm 100$	nA	$V_{DS}=0V, V_{GS}=\pm 12V$
Gate-threshold voltage	$V_{GS(th)}^*$	0.5	0.8	1.0	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Drain-source on-resistance	$R_{DS(ON)}^*$		22	25	m $\Omega$	$V_{GS}=4V, I_D=5A$
			38	40	m $\Omega$	$V_{GS}=2.5V, I_D=4A$
Forward transconductance	$g_{FS}$		13		S	$V_{DS}=5V, I_D=5A$
<b>DRAIN-SOURCE DIODE CHARACTERISTICS</b>						
Diode forward voltage	$V_{SD}$	0.42		1.28	V	$I_S=1.7A, V_{GS}=0V$
<b>DYNAMIC CHARACTERISTICS</b>						
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	
<b>SWITCHING CHARACTERISTICS</b>						
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	$V_{DD}=10V, I_D=1.0A, V_{GEN}=4V, R_{GEN}=10\Omega, R_L=10\Omega$
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 < 300 $\mu s$ , Duty cycle  $\leq 2\%$  .

**Dual N-Channel Enhancement Mode Field Effect Transistor**

**Typical Characteristics**

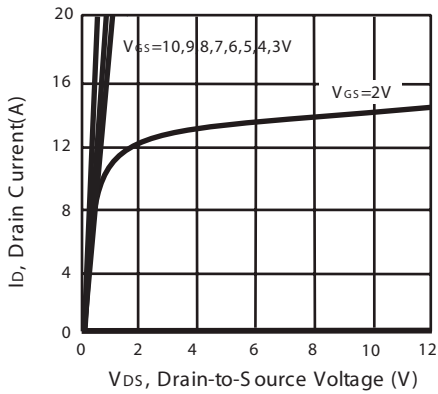


Figure 1. Output Characteristics

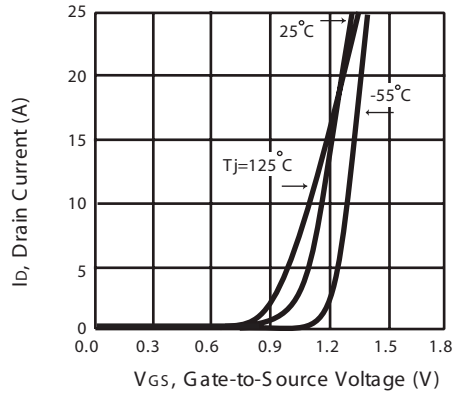


Figure 2. Transfer Characteristics

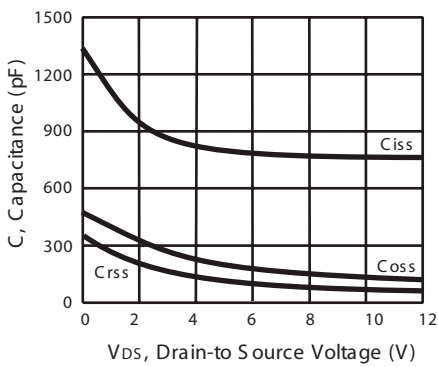


Figure 3. Capacitance

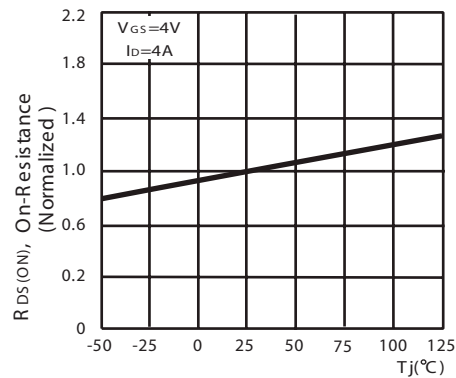


Figure 4. On-Resistance Variation with Temperature

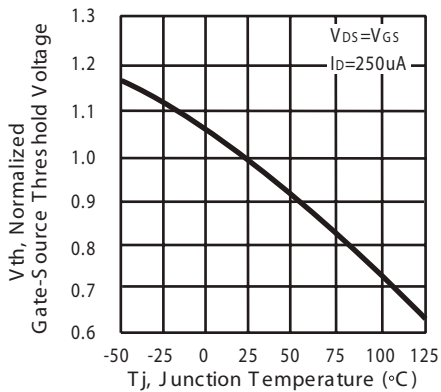


Figure 5. Gate-Source Threshold Voltage Variation with Temperature

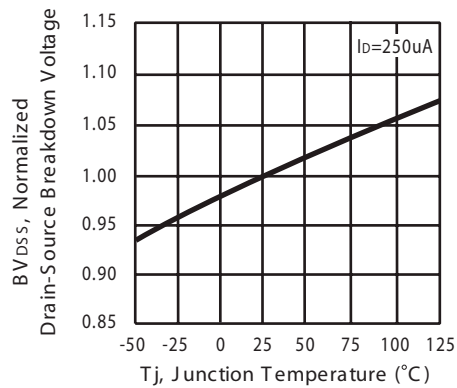


Figure 6. Breakdown Voltage Variation with Temperature

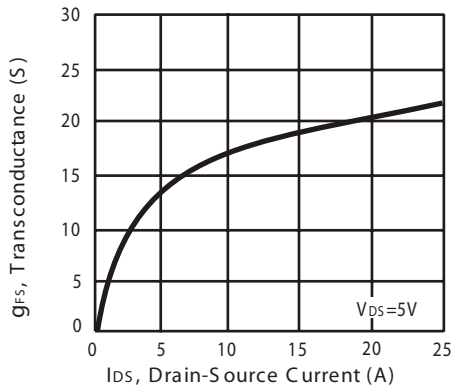


Figure 7. Transconductance Variation with Drain Current

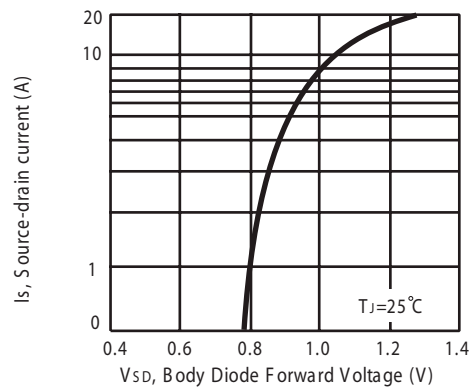


Figure 8. Body Diode Forward Voltage Variation with Source Current

**Dual N-Channel Enhancement Mode Field Effect Transistor**

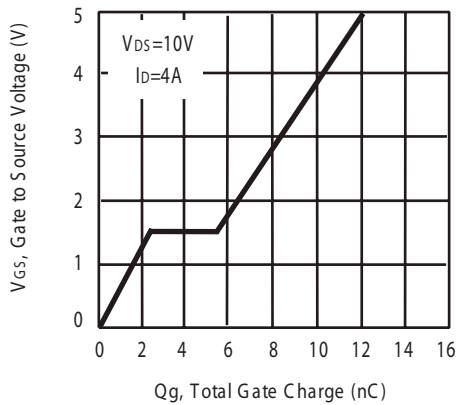


Figure 9. Gate Charge

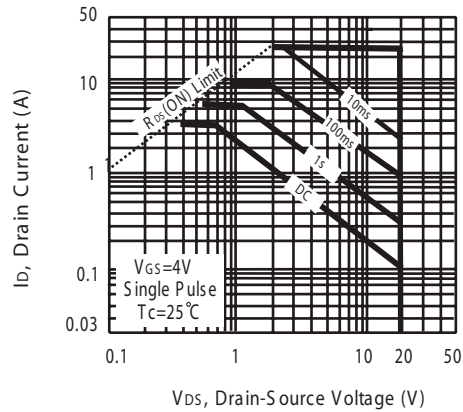


Figure 10. Maximum Safe Operating Area

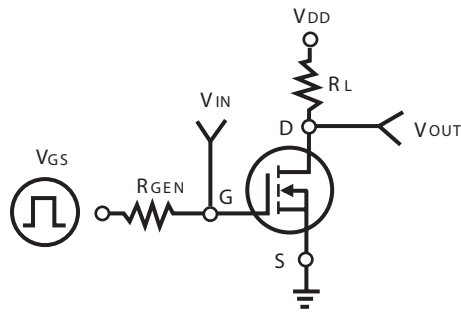


Figure 11. Switching Test Circuit

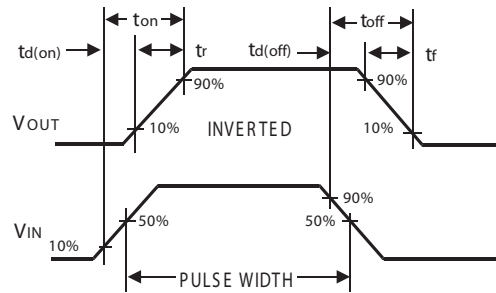
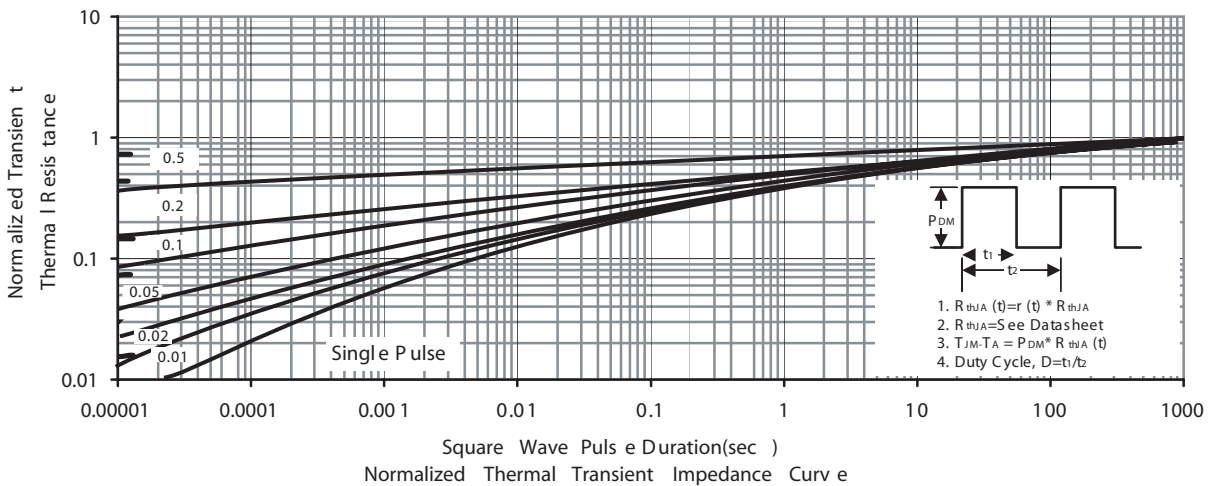


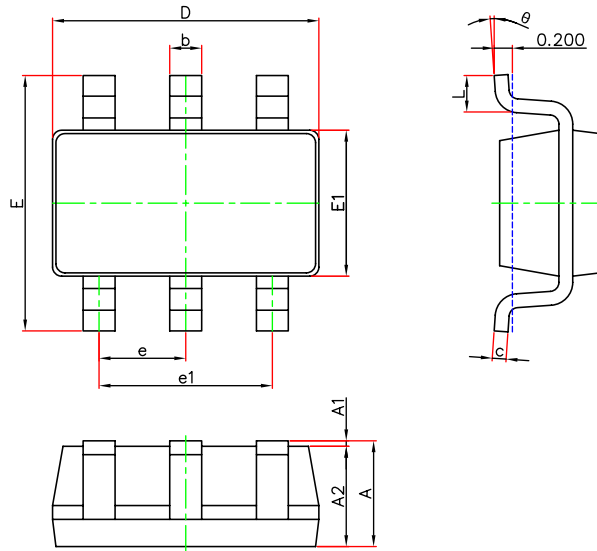
Figure 12. Switching Waveforms



1.  $R_{\theta JA}(t) = f(t) * R_{\theta JA}$
2.  $R_{\theta JA}$  = See Datasheet
3.  $T_{JM-TA} = P_{DM} * R_{\theta JA}(t)$
4. Duty Cycle,  $D = t_1/t_2$

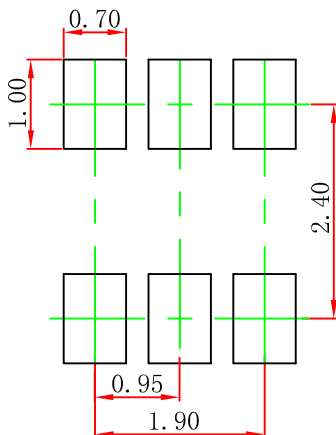
**Dual N-Channel Enhancement Mode Field Effect Transistor**

**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**



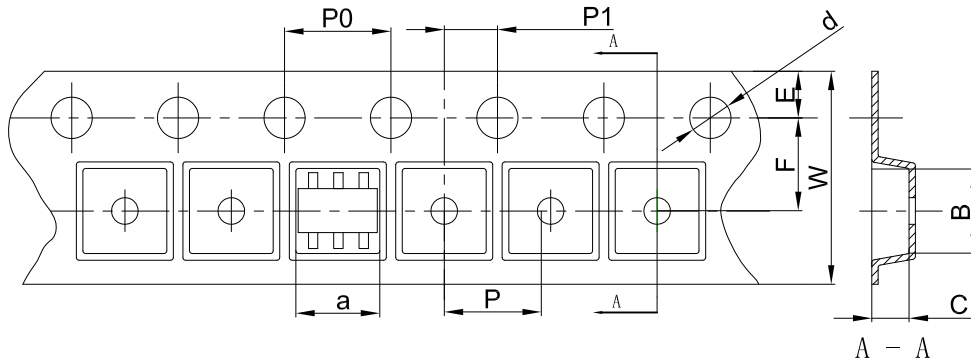
**Note:**

1. Controlling dimension: in millimeters
2. General tolerance: ±0.05mm
3. The pad layout is for reference purposes only

Dual N-Channel Enhancement Mode Field Effect Transistor

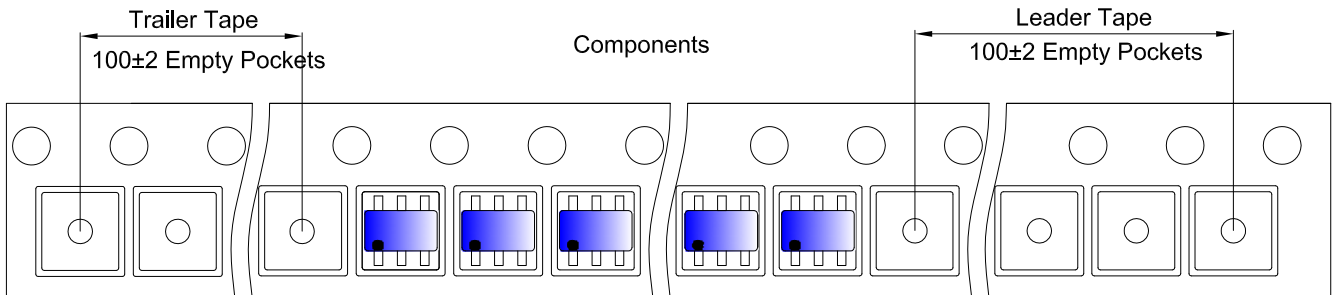
**SOT-23-6 Tape and Reel**

**SOT-23-6 Embossed Carrier Tape**

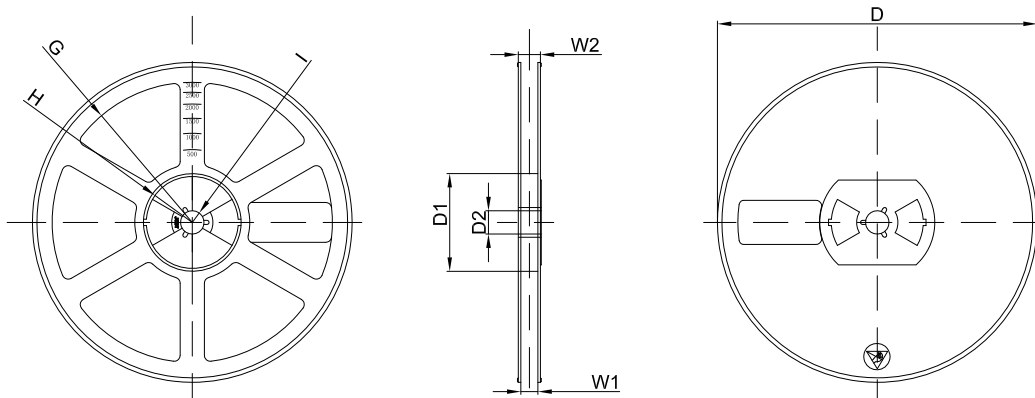


DIMENSIONS ARE IN MILLIMETER										
TYPE	a	B	C	d	E	F	P0	P	P1	W
SOT-23-6	3.17	3.23	1.37	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

**SOT-23-6 Tape Leader and Trailer**



**SOT-23-6 Reel**



DIMENSIONS ARE IN MILLIMETER								
REEL OPTION	D	D1	D2	G	H	I	W1	W2
13" DIA	Ø180.00	60.00	13.00	R78.00	R25.60	R6.50	9.50	13.10
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1