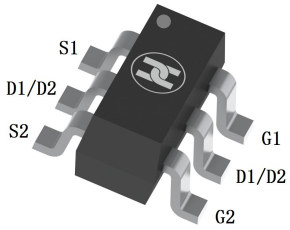
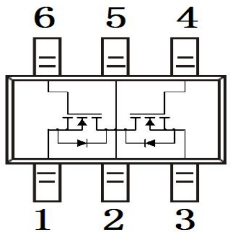
Dual N-Channel Enhancement Mode Field Effect Transistor



SOT-23-6



FEATURES

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

MECHANICAL DATA

- Case: SOT-23-6
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Weight: 0.3 grams (approximate)
- Marking:8205A

MAXIMUM RATINGS (T_A = 25°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°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	°C/W
Junction and Storage temperature Range	T_J,T_{STG}	-55 ~+150	°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}=20V, V_{GS}=0V
Gate-body leakage current	I_{GSS}*			±100	nA	V_{DS}=0V, V_{GS}=±12V
Gate-threshold voltage	$V_{GS(th)}$*	0.4	0.62	1.0	V	V_{DS}=V_{GS}, I_D=250μA
Drain-source on-resistance	$R_{DS(ON)}$*		18.5	25	mΩ	V_{GS}=4.5V , I_D=4A
			25.5	34	mΩ	V_{GS}=2.5V, I_D=3A
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% .

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Typical Characteristics

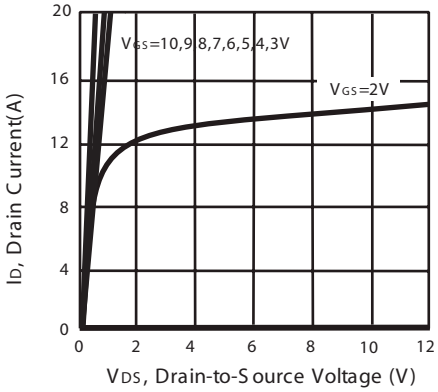

Figure 1. Output Characteristics

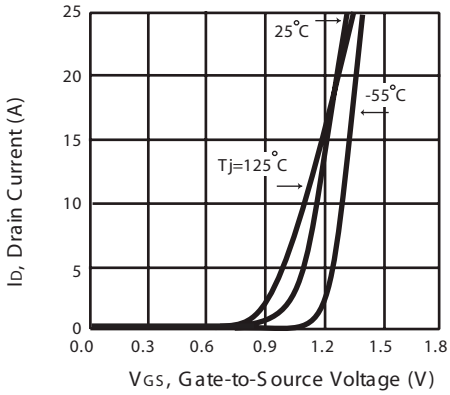

Figure 2. Transfer Characteristics

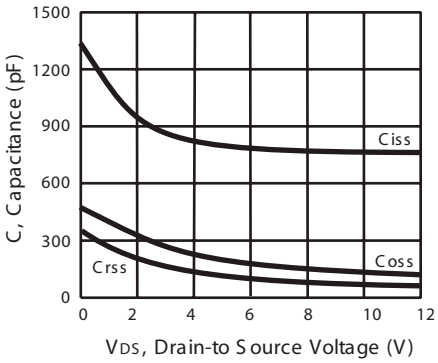

Figure 3. Capacitance

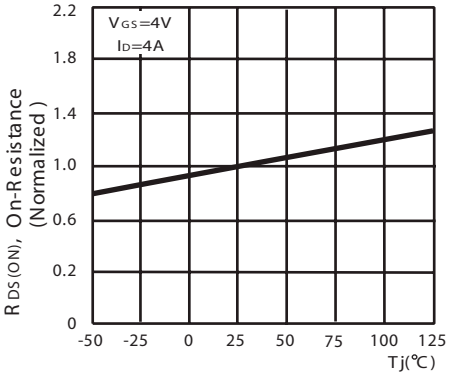

Figure 4. On-Resistance Variation with Temperature

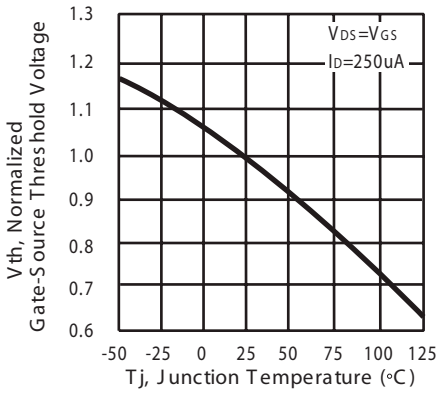

Figure5. Gate-Source Threshold Voltage with Temperature

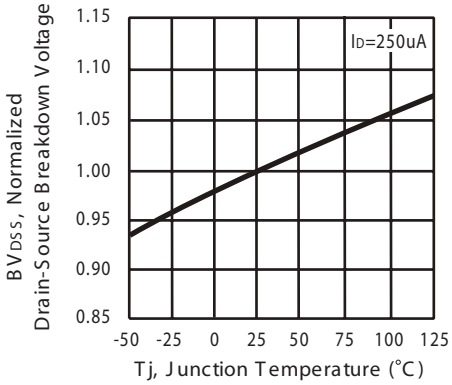

Figure6 .BreakdownVoltageVariation with Temperature

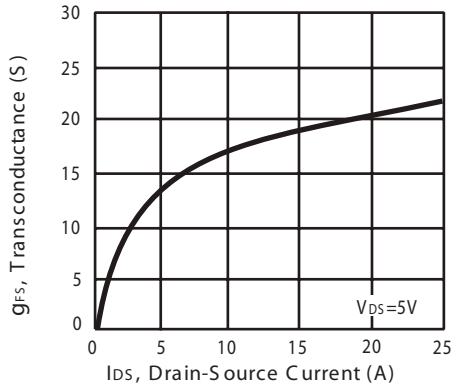

Figure 7. Transconductance Variation with Drain Current

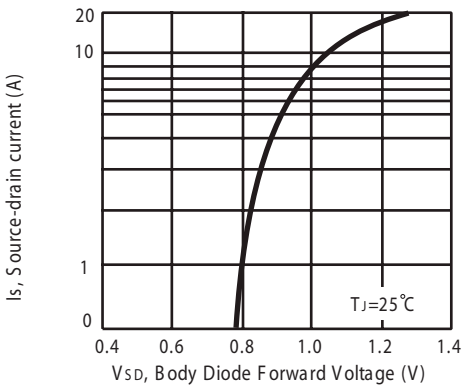

Figure 8. Body Diode Forward Voltage Variation with Source Current

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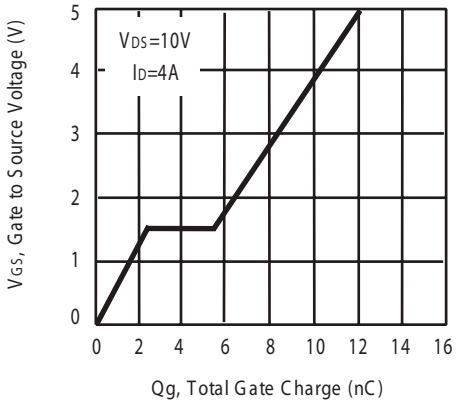


Figure 9. Gate Charge

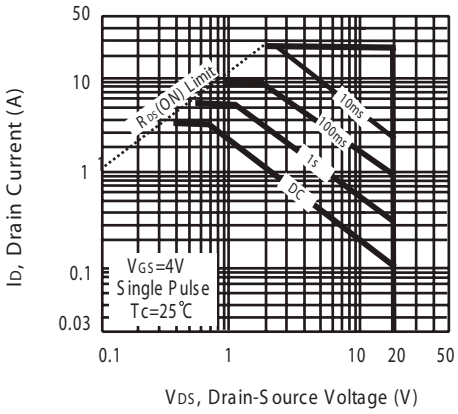


Figure 10. Maximum Safe Operating Area

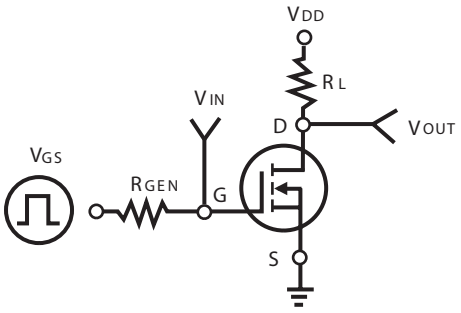


Figure 11. Switching Test Circuit

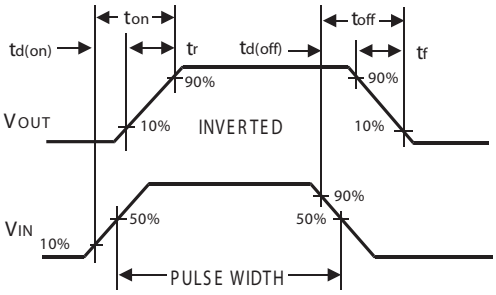
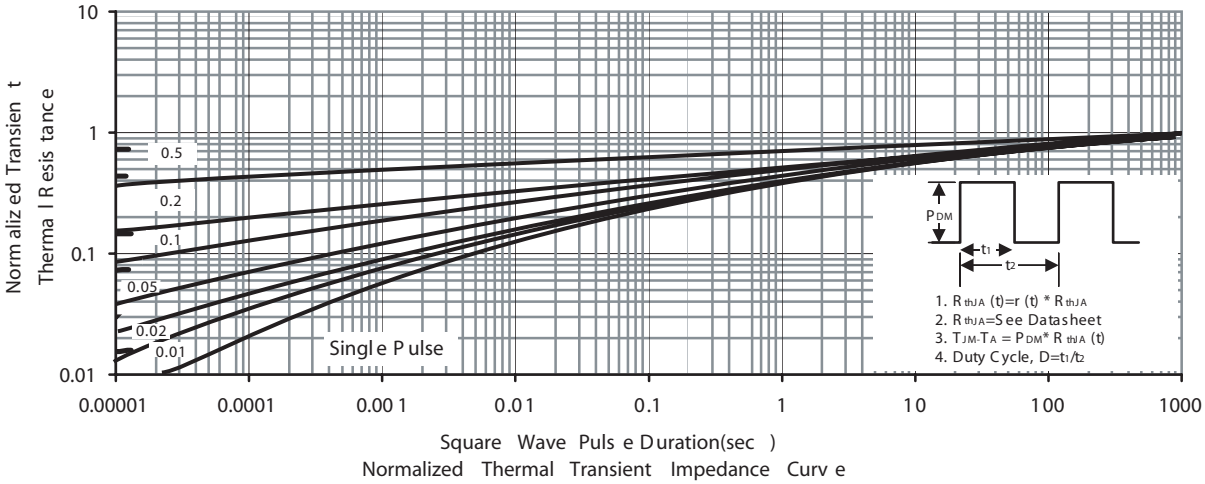


Figure 12. Switching Waveforms



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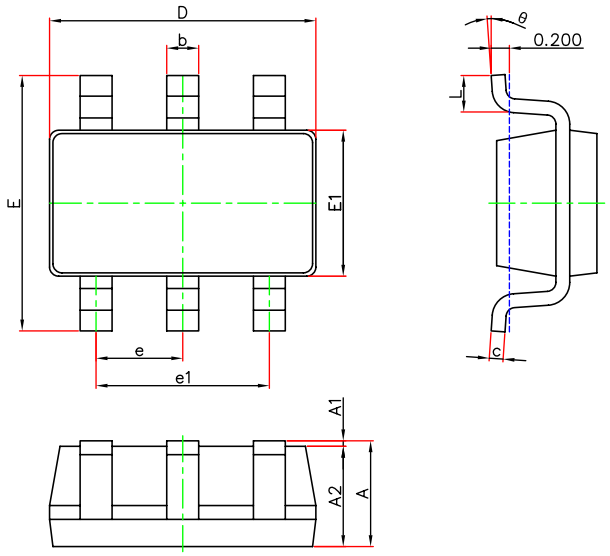
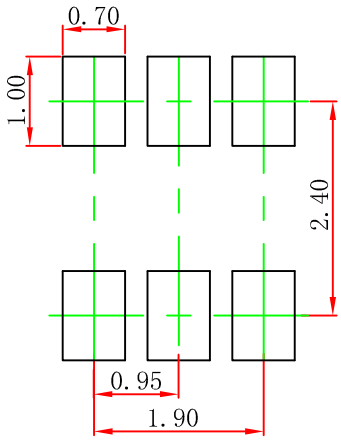
SOT-23-6 Package Outline Dimensions



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

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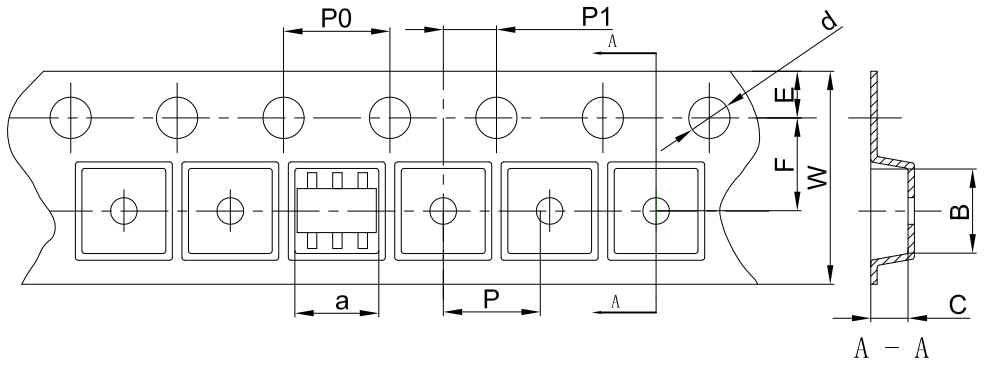
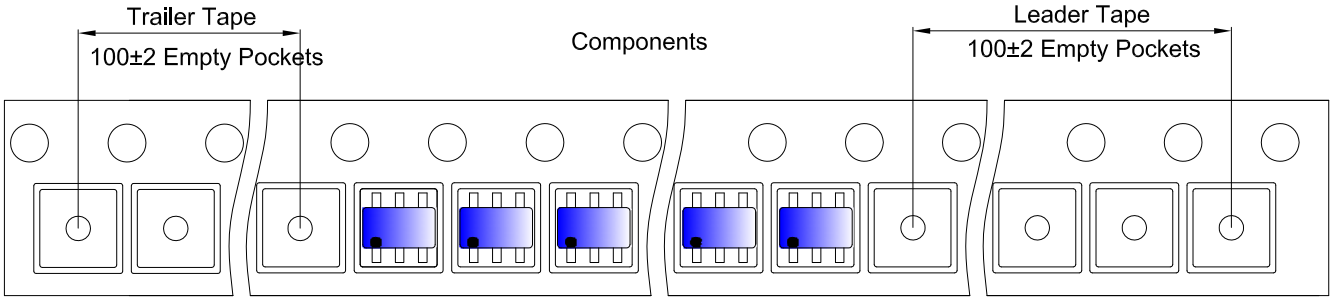
SOT-23-6 Tape and Reel

SOT-23-6 Embossed Carrier Tape

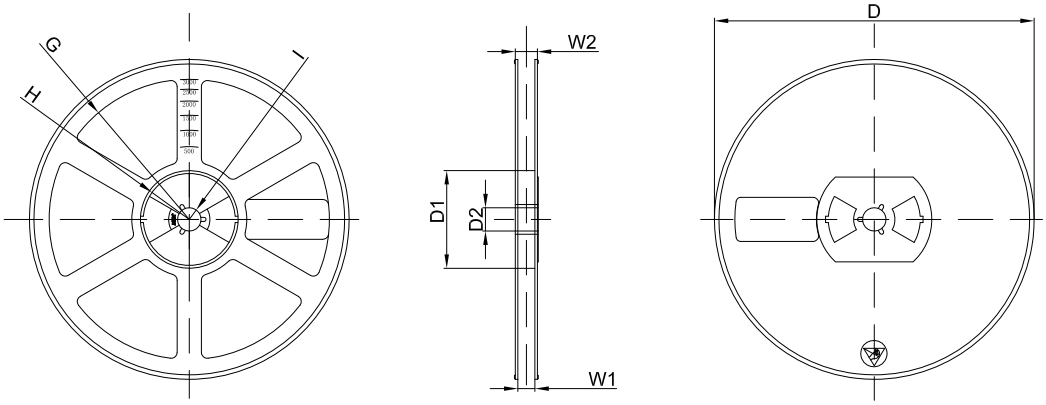


	DIMENSIONS ARE IN MILLIMETER									
TYPE	a	B	C	d	E	F	P0	P	P1	W
SOT-23-6	3.17	3.23	1.37	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

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