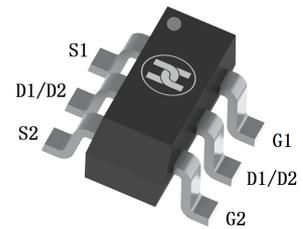
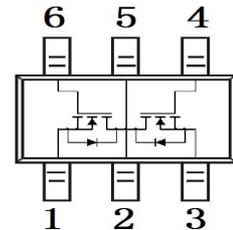


Dual N-Channel Enhancement Mode Field Effect Transistor
FEATURES

- 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)
- Marking: 8205A

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 ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
STATIC CHARACTERISTICS						
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	μA	$V_{DS}=20V, V_{GS}=0V$
Gate-body leakage current	I_{GSS}^*			± 100	nA	$V_{DS}=0V, V_{GS}=\pm 12V$
Gate-threshold voltage	$V_{GS(th)}^*$	0.4	0.62	1.0	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Drain-source on-resistance	$R_{DS(ON)}^*$		18.5	25	m Ω	$V_{GS}=4.5V, I_D=4A$
			25.5	34	m Ω	$V_{GS}=2.5V, I_D=3A$
Forward transconductance	g_{FS}		13		S	$V_{DS}=5V, I_D=5A$
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode forward voltage	V_{SD}	0.42		1.28	V	$I_S=1.7A, V_{GS}=0V$
DYNAMIC CHARACTERISTICS						
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 CHARACTERISTICS						
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 μs , Duty cycle $\leq 2\%$.

Dual N-Channel Enhancement Mode Field Effect Transistor

Typical Characteristics

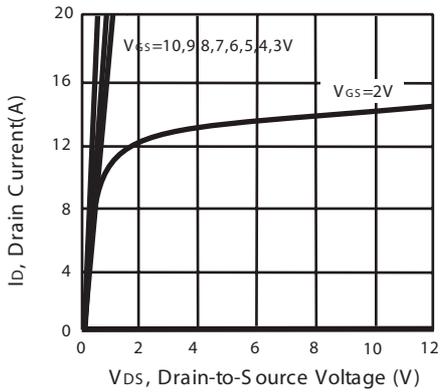


Figure 1. Output Characteristics

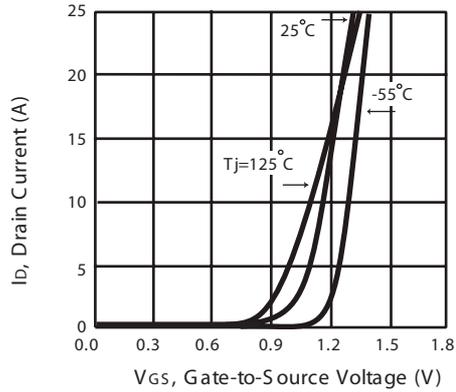


Figure 2. Transfer Characteristics

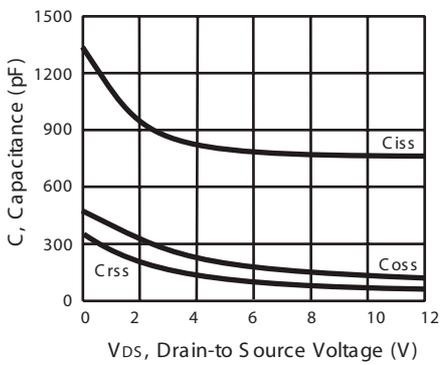


Figure 3. Capacitance

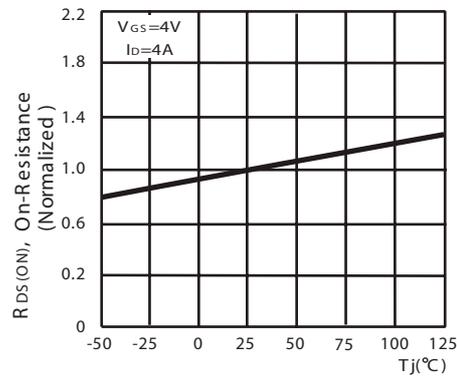


Figure 4. On-Resistance Variation with Temperature

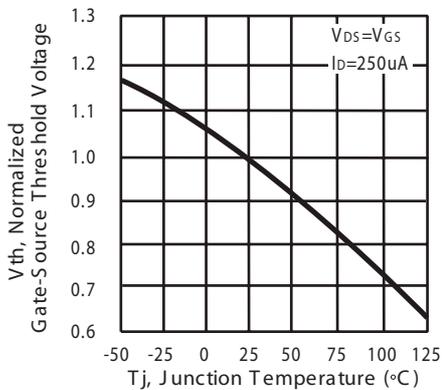


Figure 5. Gate-Source Threshold Voltage with Temperature

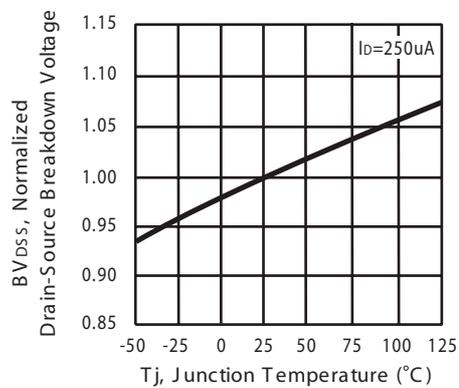


Figure 6. Breakdown Voltage Variation with Temperature

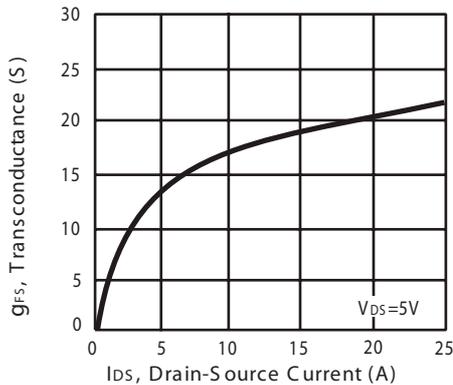


Figure 7. Transconductance Variation with Drain Current

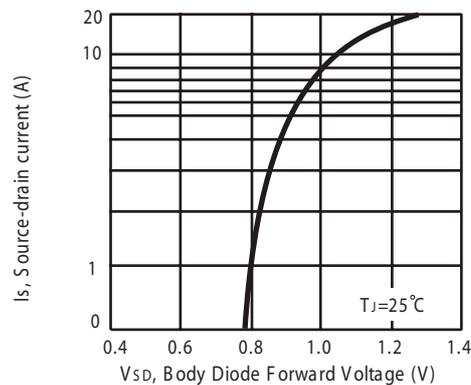


Figure 8. Body Diode Forward Voltage Variation with Source Current

Dual N-Channel Enhancement Mode Field Effect Transistor

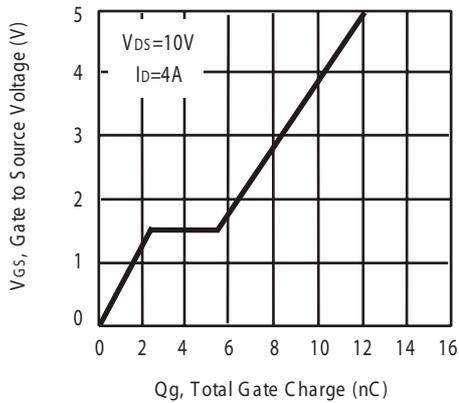


Figure 9. Gate Charge

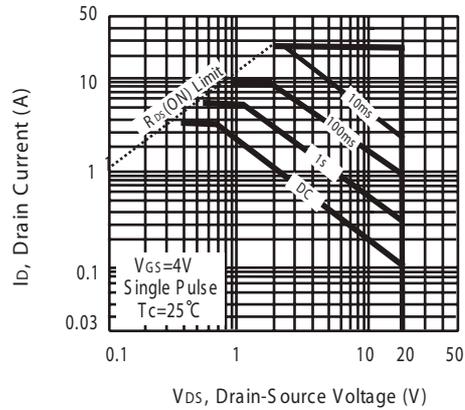


Figure 10. Maximum Safe Operating Area

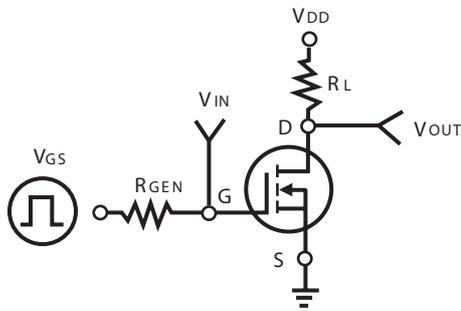


Figure 11. S switching Test Circuit

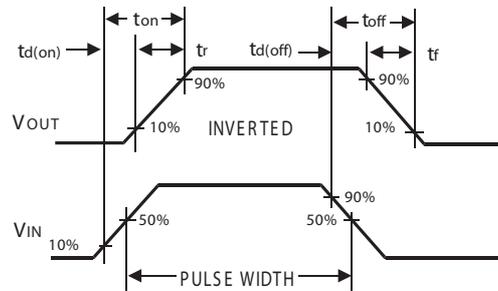
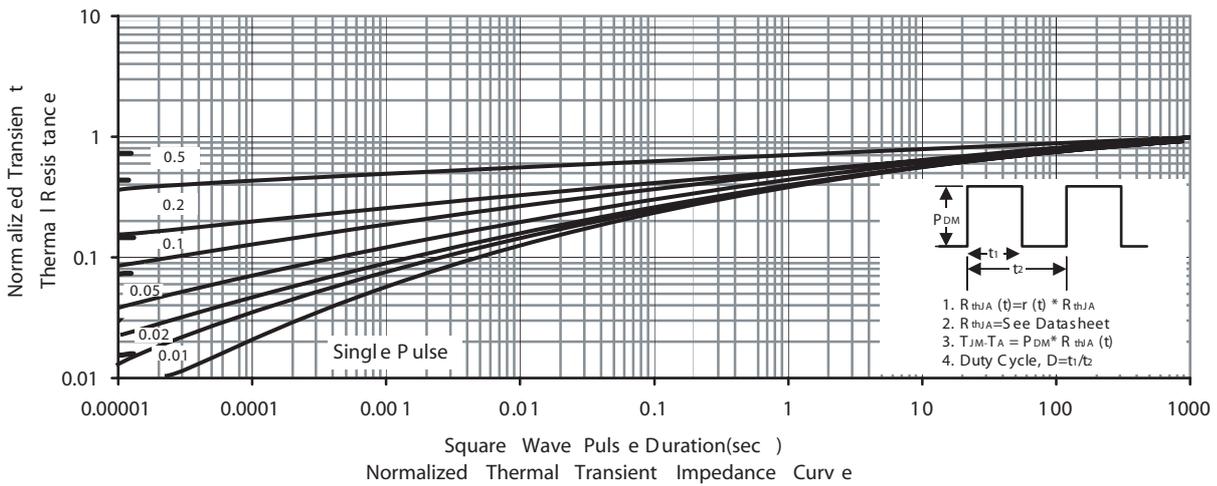
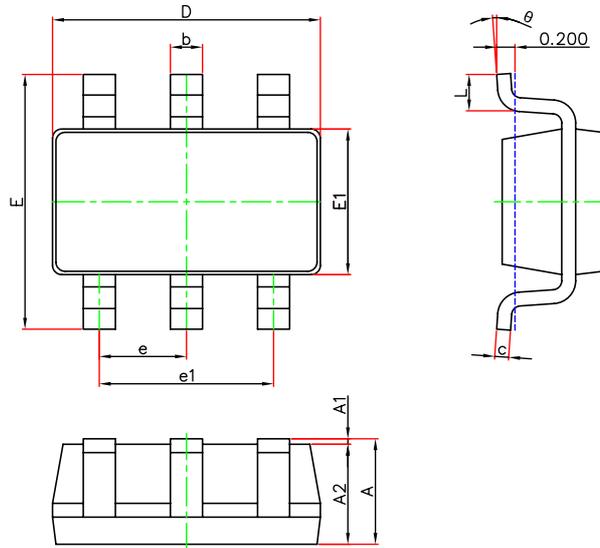
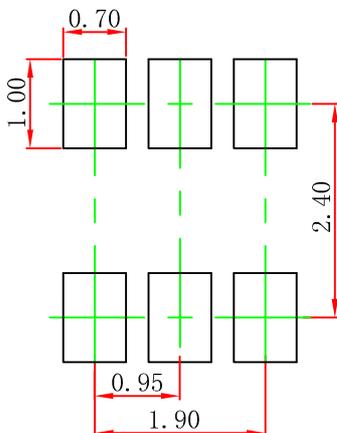


Figure 12. S switching Waveforms

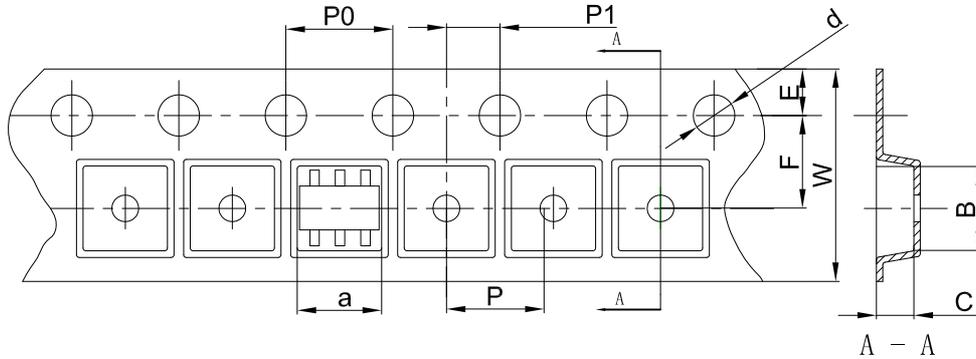


Dual N-Channel Enhancement Mode Field Effect Transistor
SOT-23-6 Package Outline Dimensions


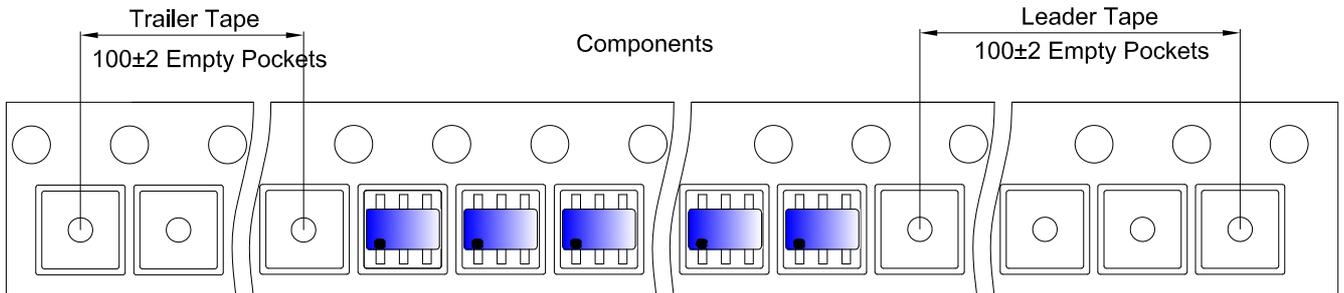
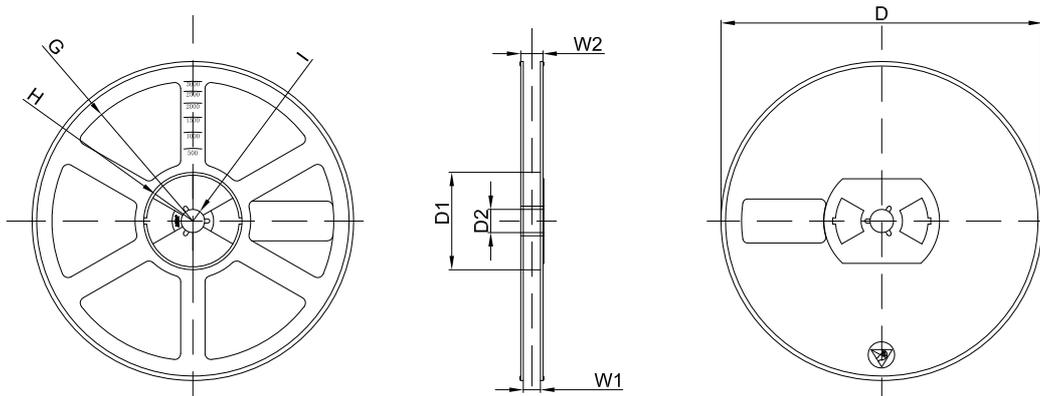
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		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: $\pm 0.05\text{mm}$
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