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TSS



MOV

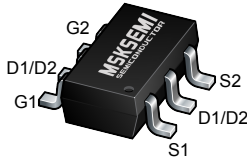


GDT

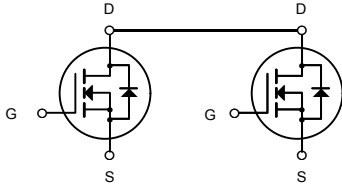


PLED

Product data sheet



SOT23-6L



Dual N-Channel MOSFET

Description

The MS8205A uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

$V_{DS} = 20V$ $I_D = 5 A$

$R_{DS(ON)} < 23m\Omega$ @ $V_{GS}=4.5V$

Application

Battery protection

Load switch

Uninterruptible power supply

Absolute Maximum Ratings@ $T_J=25^\circ C$ (unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 10	V
$I_D@T_A=25^\circ C$	Drain Current, V_{GS} @ 4.5V ³	5	A
I_{DM}	Pulsed Drain Current ¹	20	A
$P_D@T_A=25^\circ C$	Total Power Dissipation	1.25	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$
R_{thj-a}	Maximum Thermal Resistance, Junction-ambient ³	100	$^\circ C/W$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=16V, V_{GS}=0V$			1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS}=\pm 10V, V_{DS}=0V$			± 100	nA
ON CHARACTERISTICS						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.7	1.2	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	$V_{GS}=4.5V, I_D=4A$		20	23	m
		$V_{GS}=2.5V, I_D=3A$		25	28	m
g_{FS}	Forward Transconductance	$V_{DS}=10V, I_D=5A$		10		S
DYNAMIC CHARACTERISTICS ^c						
C_{ISS}	Input Capacitance	$V_{DS}=8V, V_{GS}=0V$ $f=1.0MHz$		800		pF
C_{OSS}	Output Capacitance			155		pF
C_{RSS}	Reverse Transfer Capacitance			125		pF
SWITCHING CHARACTERISTICS ^c						
$t_{D(ON)}$	Turn-On Delay Time	$V_{DD}=10V$ $I_D=1A$		18.3		ns
t_r	Rise Time			4.8		ns
$t_{D(OFF)}$	Turn-Off Delay Time	$V_{GS}=10V$ $R_{GEN}=60\Omega$		43.5		ns
t_f	Fall Time			20		ns
Q_g	Total Gate Charge	$V_{DS}=10V, I_D=3A,$ $V_{GS}=4.5V$		11		nC
Q_{gs}	Gate-Source Charge			2.2		nC
Q_{gd}	Gate-Drain Charge			2.5		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
I_S	Maximum Continuous Drain-Source Diode Forward Current				2	A
V_{SD}	Diode Forward Voltage ^b	$V_{GS}=0V, I_S=1.7A$		0.79	1.2	V
Notes a. Surface Mounted on FR4 Board, $t \leq 10\text{sec}$. b. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$. c. Guaranteed by design, not subject to production testing.						

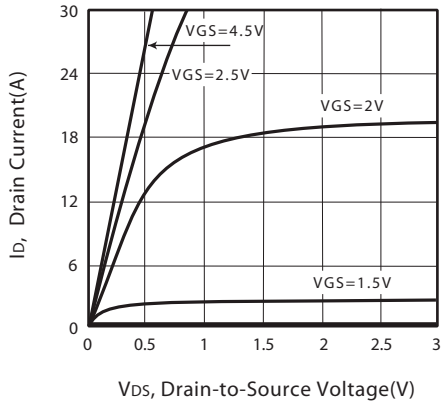


Figure 1. Output Characteristics

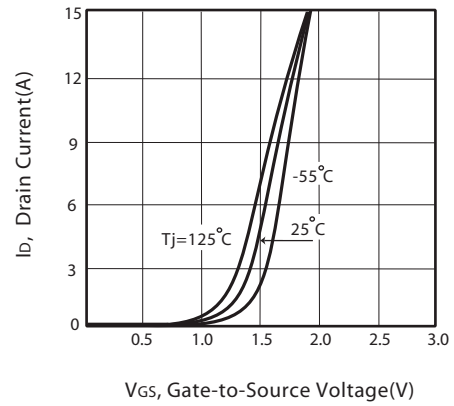


Figure 2. Transfer Characteristics

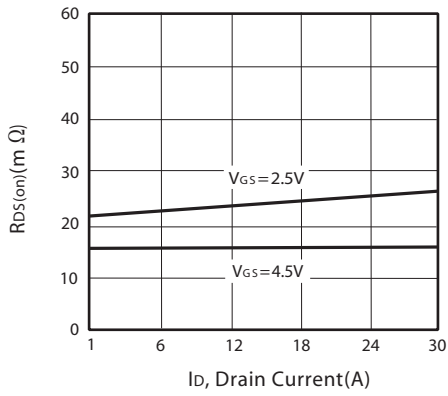


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

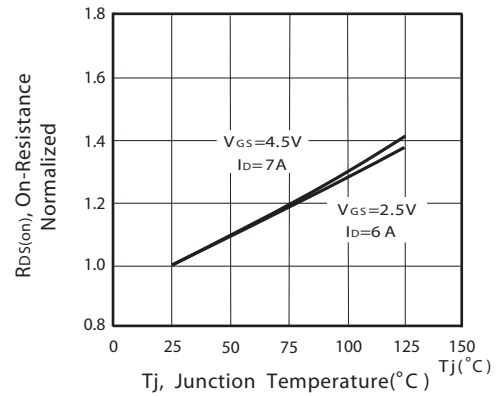


Figure 4. On-Resistance Variation with Drain Current and Temperature

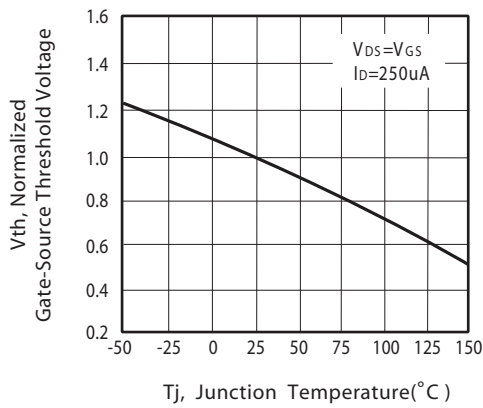


Figure 5. Gate Threshold Variation with Temperature

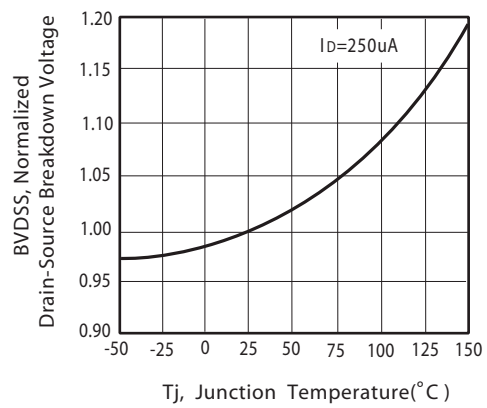


Figure 6. Breakdown Voltage Variation with Temperature

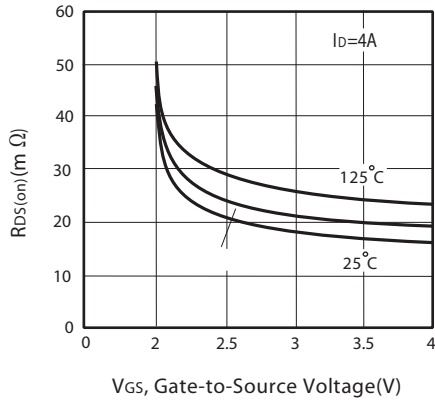


Figure 7. On-Resistance vs. Gate-Source Voltage

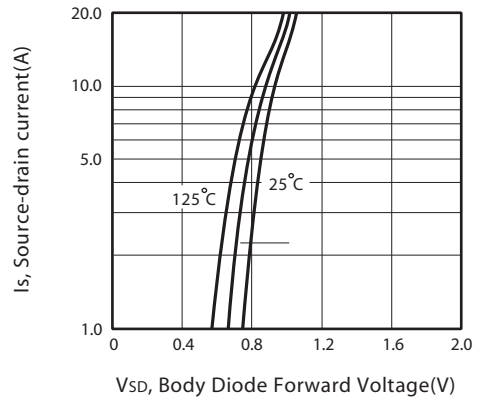


Figure 8. Body Diode Forward Voltage Variation with Source Current

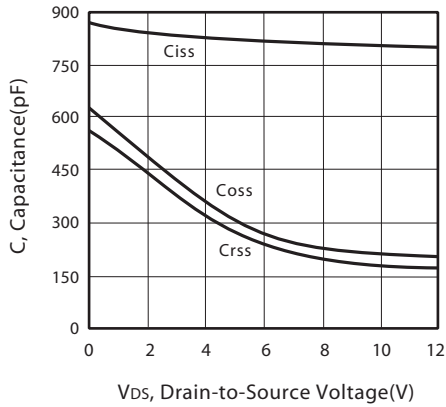


Figure 9. Capacitance

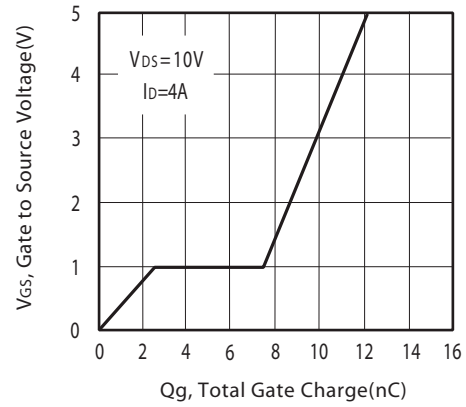


Figure 10. Gate Charge

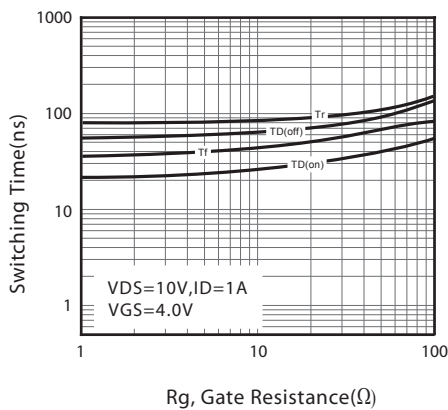


Figure 11. switching characteristics

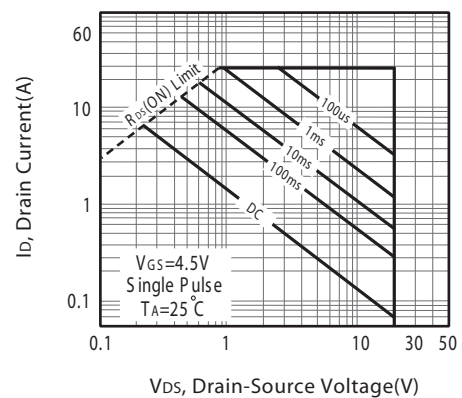


Figure 12. Maximum Safe Operating Area

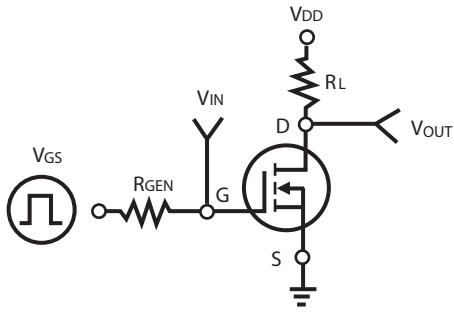


Figure 13. Switching Test Circuit

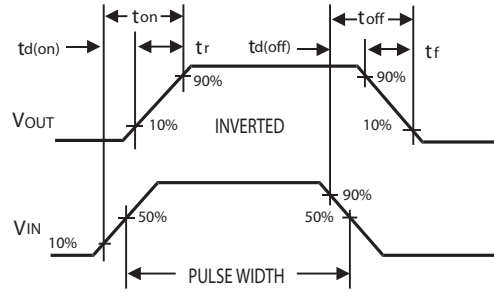
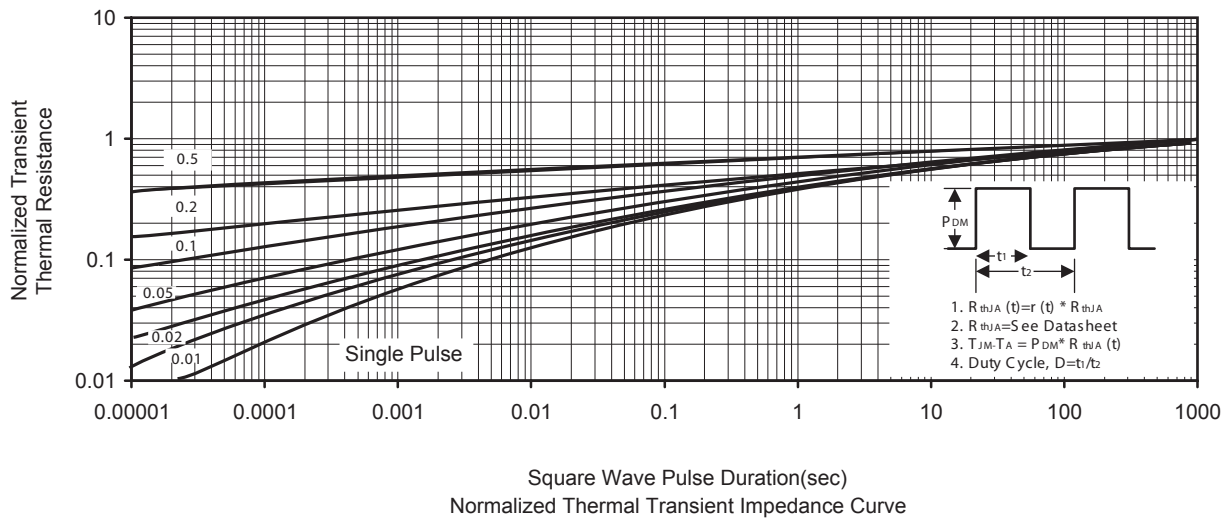
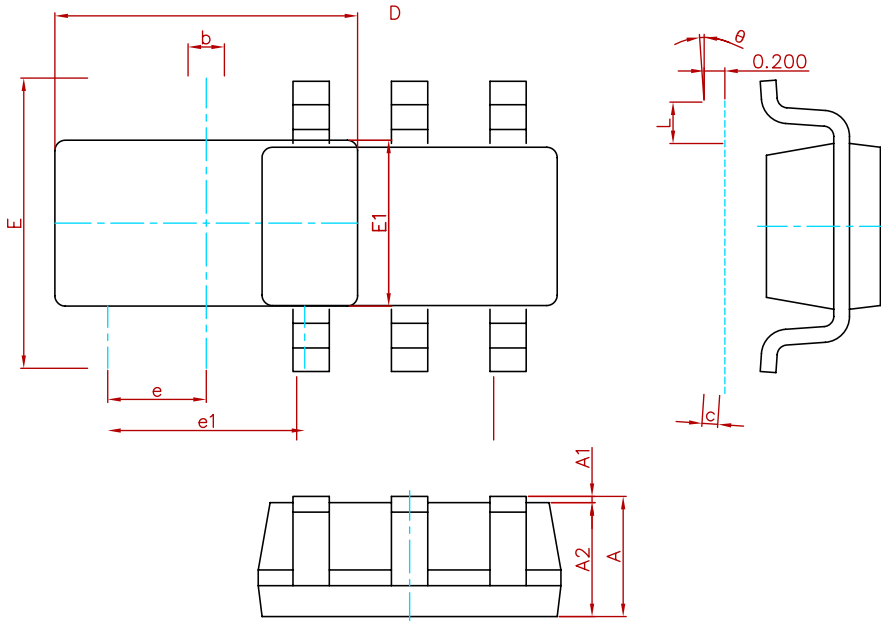


Figure 14. Switching Waveforms

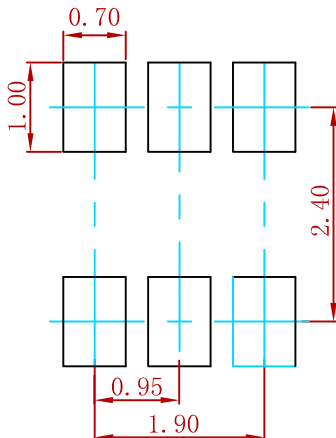


PACKAGE MECHANICAL DATA



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°

Suggested Pad Layout



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

REEL SPECIFICATION

P/N	PKG	QTY
MS8205A	SOT-23-6L	3000

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