TM08N02MI6

N -Channel Enhancement Mosfet

General Description

- Low $R_{DS(ON)}$
- RoHS and Halogen-Free Compliant

Applications

- Load switch
- PWM

General Features

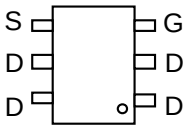
V_{DS} = 20V I_D = 8.0A

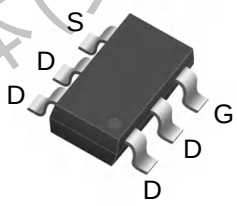
$R_{DS(ON)}$ =19mΩ(typ.) @V_{GS}=4.5V

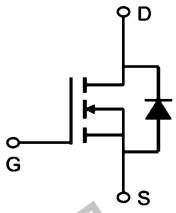
100% UIS Tested

100% R_g Tested

MI6:SOT-23-6L







Marking: AZ

Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±12	V
I_D@T_A=25℃	Continuous Drain Current, V_{GS} @ 4.5V[1]	8.0	A
I_D@T_A=70℃	Continuous Drain Current, V_{GS} @ 4.5V[1]	4.8	A
I_{DM}	Pulsed Drain Current[2]	24	A
P_D	Total Power Dissipation[3]	1.56	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient [1]	---	80	℃/W
R	Thermal Resistance Junction Case[1]			℃/W

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Electrical Characteristics: (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	20	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=20V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±10V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	0.5	0.7	0.9	V
$R_{DS(ON)}$	Drain-Source On Resistance[3]	V_{GS}=4.5V,I_D=2.5A	---	19	23	mΩ
		V_{GS}=2.5V,I_D=2A	---	23	30	
		V_{GS}=1.8V , I_D=1.5A	---	32	45	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=10V, V_{GS}=0V, f=1MHz	---	489	749	pF
C_{oss}	Output Capacitance		---	89	139	
C_{rss}	Reverse Transfer Capacitance		---	69	129	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time[2,3]	V_{DD}=10V , V_{GS}=4.5V I_D=3A,R_G=6Ω	---	4.1	6.2	ns
t_r	Rise Time[2,3]		---	11.6	18	ns
$t_{d(off)}$	Turn-Off Delay Time[2,3]		---	23.9	36	ns
t_f	Fall Time[2,3]		---	7.6	12	ns
Q_g	Total Gate Charge[2,3]	V_{GS}=4.5V, V_{DS}=10V, I_D=3A	---	10.4	15	nC
Q_{gs}	Gate-Source Charge[2,3]		---	0.9	2	nC
Q_{gd}	Gate-Drain “Miller” Charge[2,3]		---	2	3.5	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage	V_{GS}=0V,I_S=1A	---	---	1	V
Is	Drain Current	VD=VG=0V	---	---	8	A
I_{SM}	Pulsed Source Current[3]	VD=VG=0V	---	---	24	A

Notes:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Essentially independent of operating temperature.

Typical Characteristics

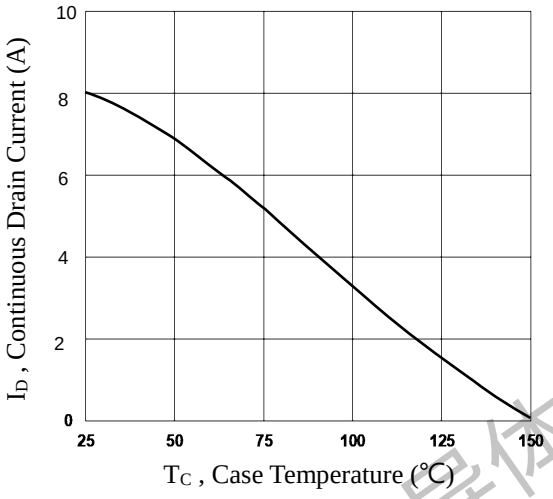

Fig.1 Continuous Drain Current vs. T_C

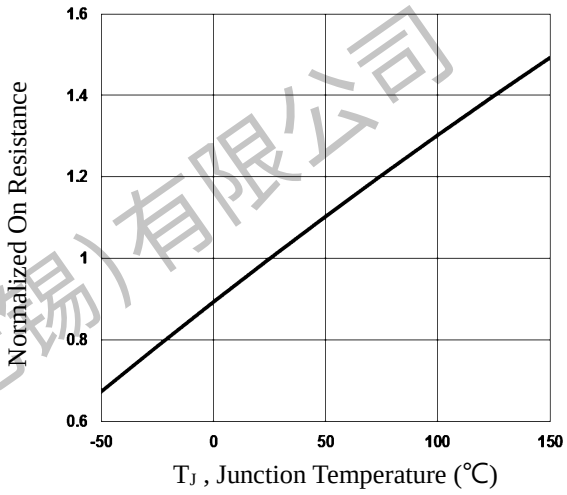

Fig.2 Normalized RDSON vs. T_J

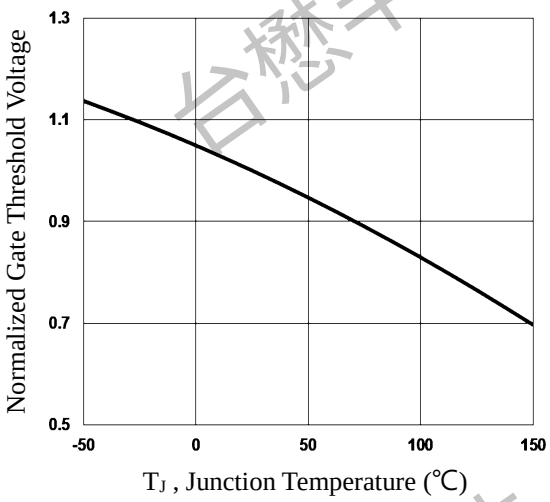

Fig.3 Normalized V_{th} vs. T_J

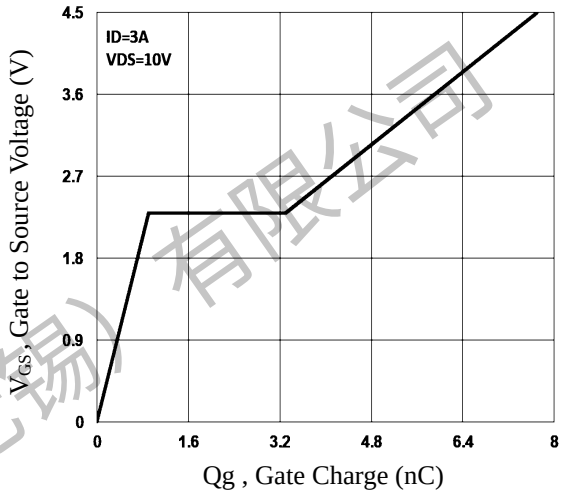

Fig.4 Gate Charge Waveform

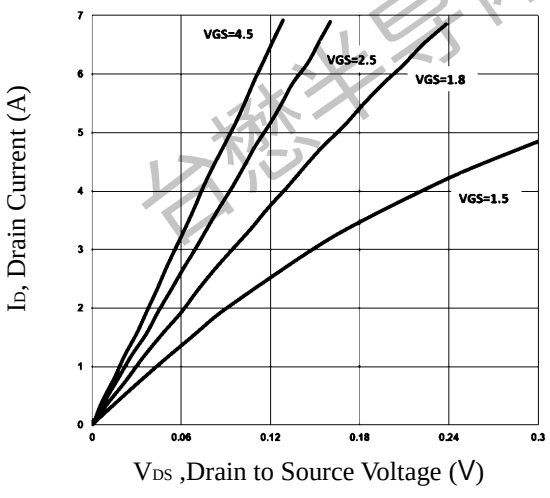

Fig.5 Typical Output Characteristics

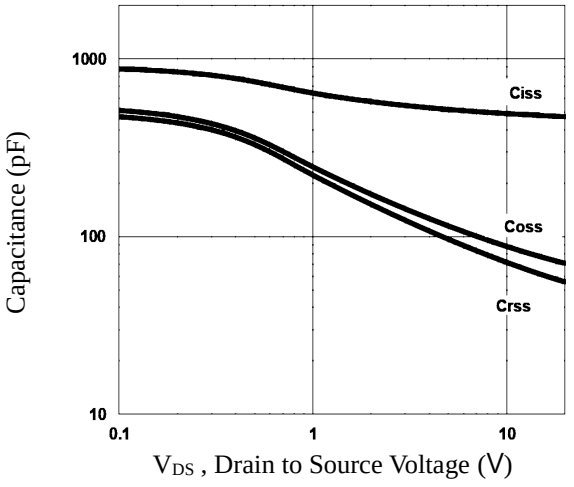

Fig.6 Capacitance Characteristics

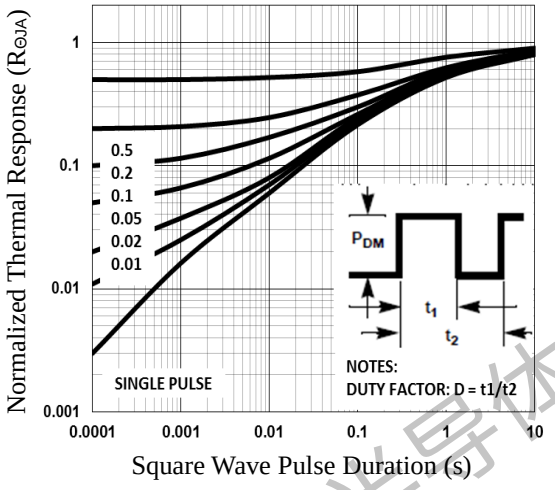

Fig.7 Normalized Transient Response

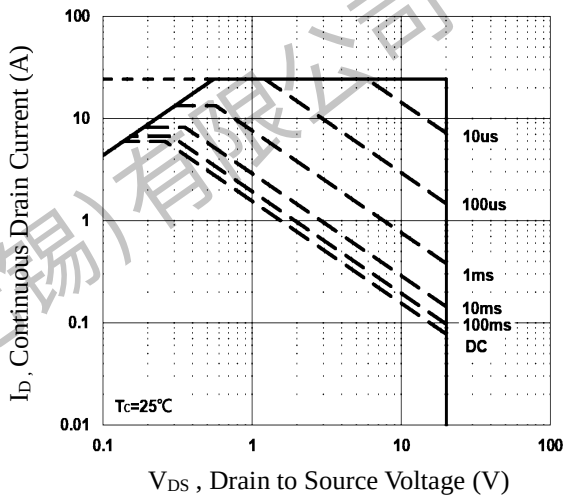

Fig.8 Maximum Safe Operation Area

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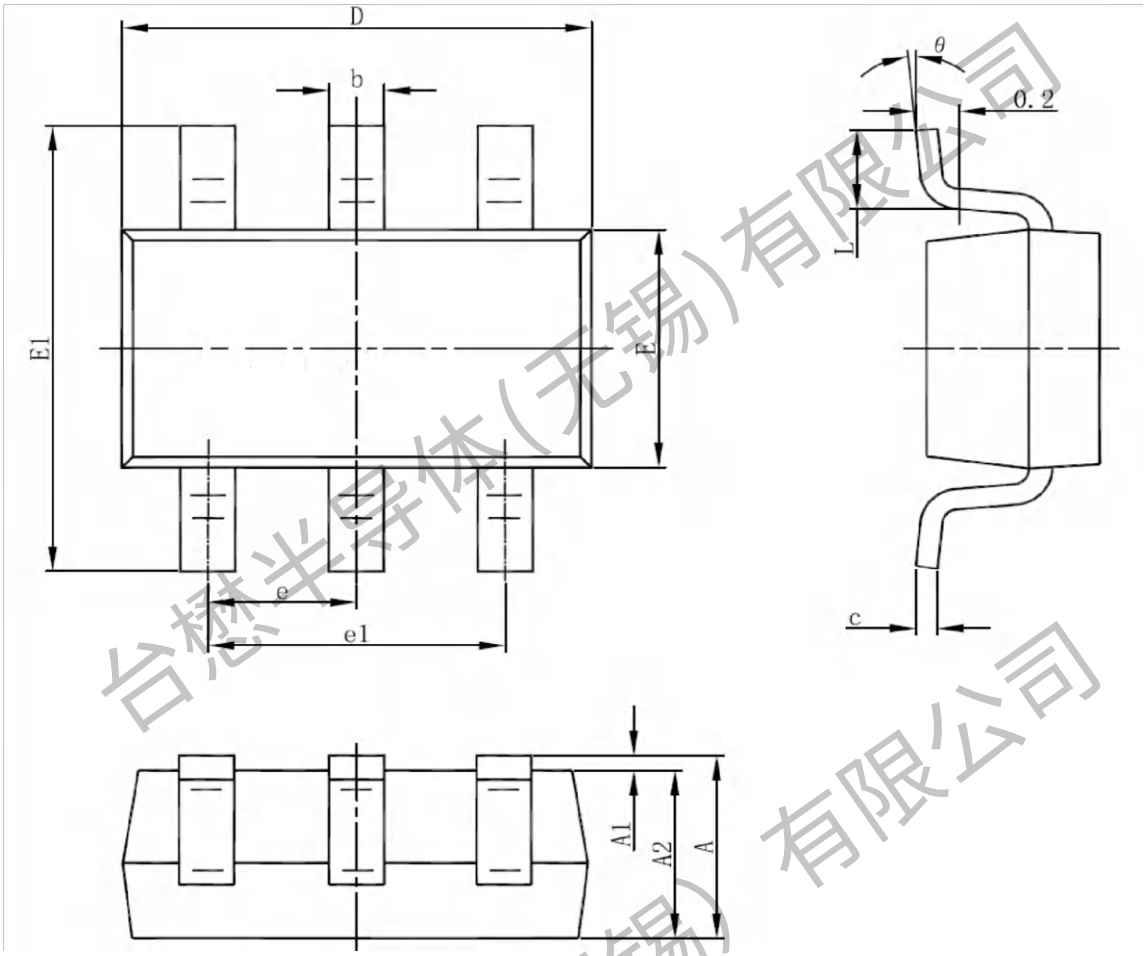
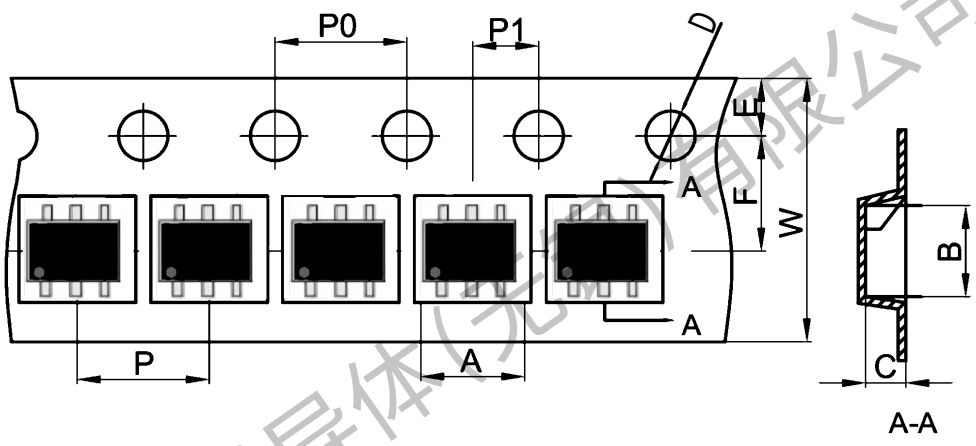
Package Mechanical Data:SOT-23-6L



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
E	1.500	1.700	0.059	0.067
E1	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°

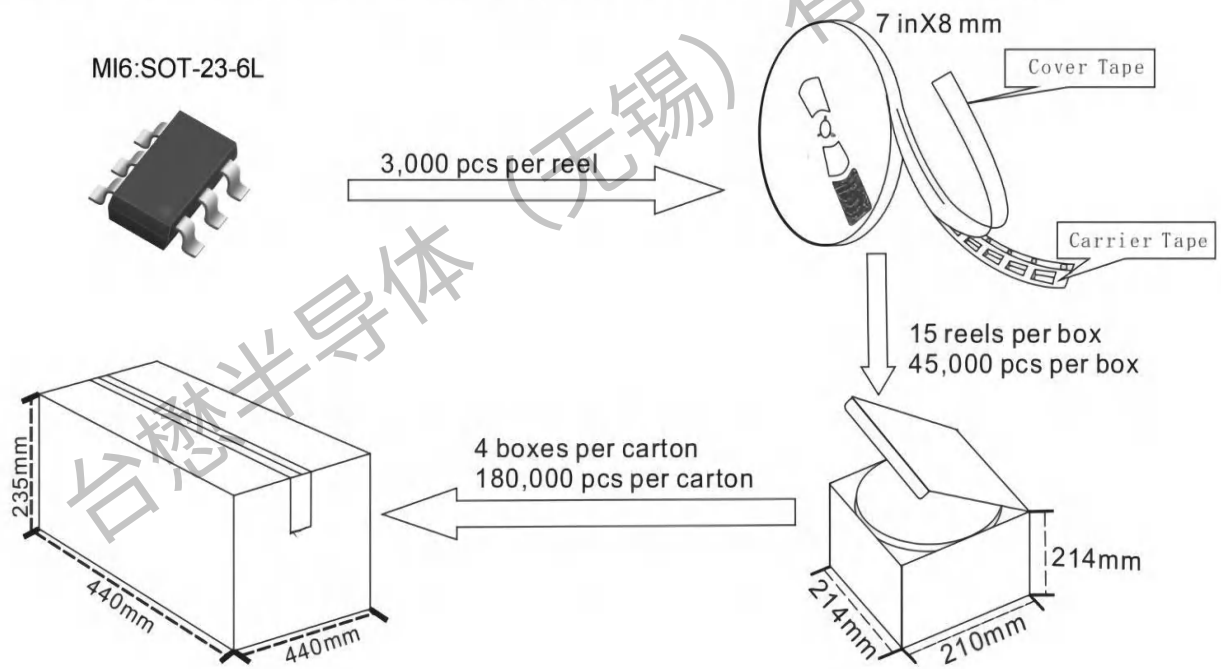
SOT-23-6L Embossed Carrier Tape



Dimensions are in millimeter										
Pkg type	A	B	C	D	E	F	P0	P	P1	W
SOT-23-6L	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23-6L Packing

The method of packaging and dimension are shown as below figure. (Dimension in mm)



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Revision history:

Date	Rev	Description	Page
2023.06.22	23.06	Original	