TM05N06MI6

N-Channel Enhancement Mosfet

General Description

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

Applications

- Load switch
- PWM

General Features

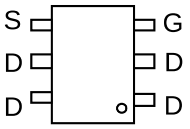
V_{DS} =60V I $_D$ = 5.0 A

$R_{DS(ON)}$ =28mΩ(typ.) @V_{GS}=10V

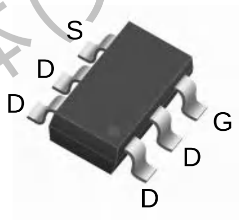
100% UIS Tested

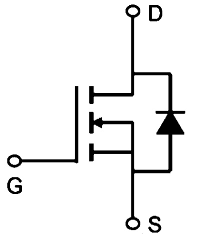
100% R_g Tested

MI6:SOT-23-6L



Marking:6005AN





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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_A=25˚C	Continuous Drain Current, V_{GS} @ 10V	5	A
I_D@T_A=100˚C	Continuous Drain Current, V_{GS} @ 10V	3.8	A
I_{DM}	Pulsed Drain Current	18	A
P_D	Total Power Dissipation	3	W
T_{STG}	Storage Temperature Range	-55 to 175	˚C
T_J	Operating Junction Temperature Range	-55 to 175	˚C

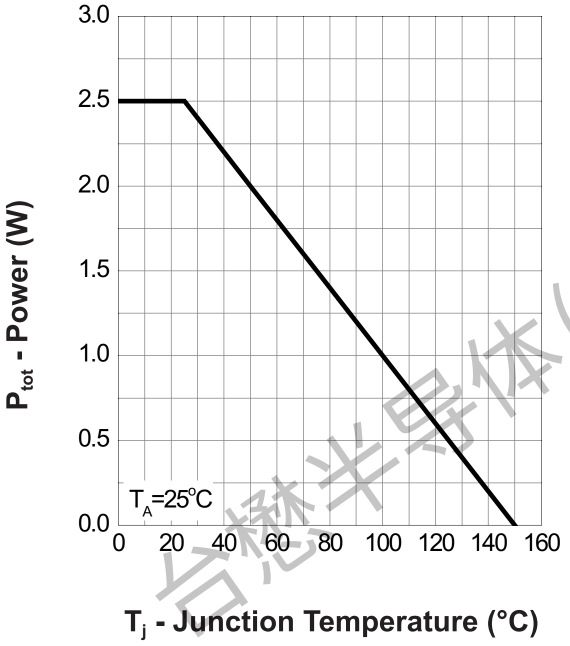
Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{θJA}$	Thermal Resistance Junction-ambient	---	48	˚C/W
$R_{θJC}$	Thermal Resistance Junction Case	---	---	˚C/W

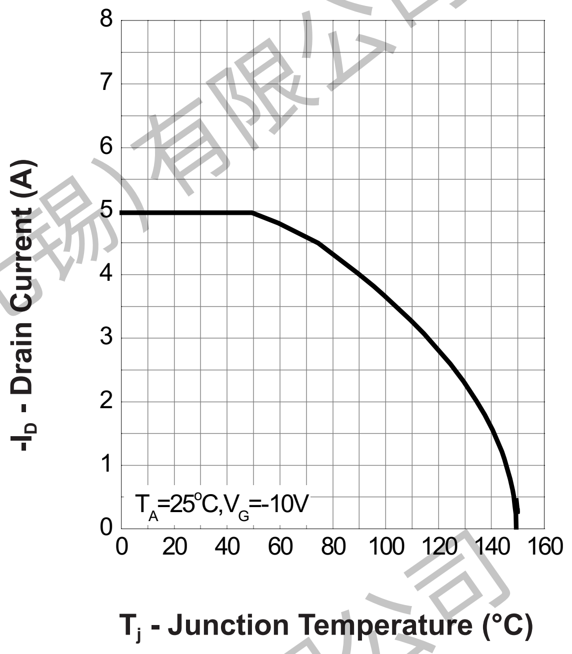
Electrical Characteristics (T$_J$=25℃ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V, V_{GS}=0V,	-	-	1.0	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1	2	3	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note3	V_{GS}=10V, I_D=15A	-	28	35	mΩ
		V_{GS}=4.5V, I_D=10A	-	36	46	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1.0MHz	-	625	-	pF
C_{oss}	Output Capacitance		-	49	-	pF
C_{rss}	Reverse Transfer Capacitance		-	41	-	pF
Q_g	Total Gate Charge	V_{DS}=30V, I_D=4.5A, V_{GS}=10V	-	14	-	nC
Q_{gs}	Gate-Source Charge		-	2.9	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	5.2	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=30V,I_D=2A, R_L=6.7Ω,R_G=3Ω, V_{GS}=10V	-	5	-	ns
t_r	Turn-on Rise Time		-	2.6	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	16.1	-	ns
t_f	Turn-off Fall Time		-	2.3	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	5	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	30	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S=15A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	T_J=25℃,I_F=15A, dI/dt=100A/μs	-	35	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	53	-	nC

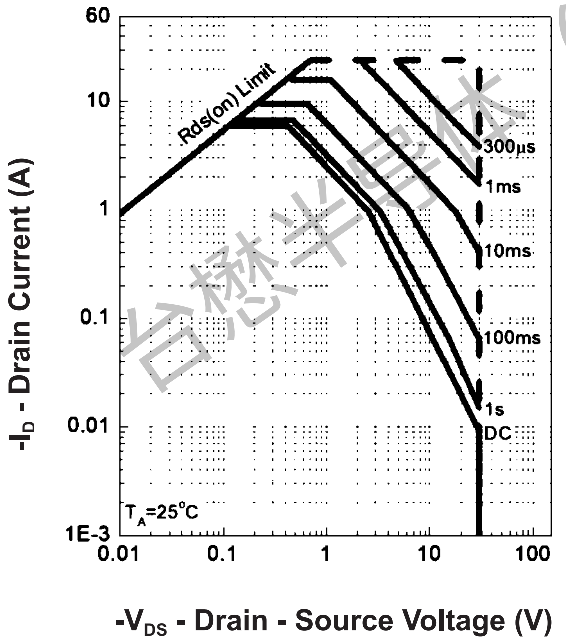
Power Dissipation



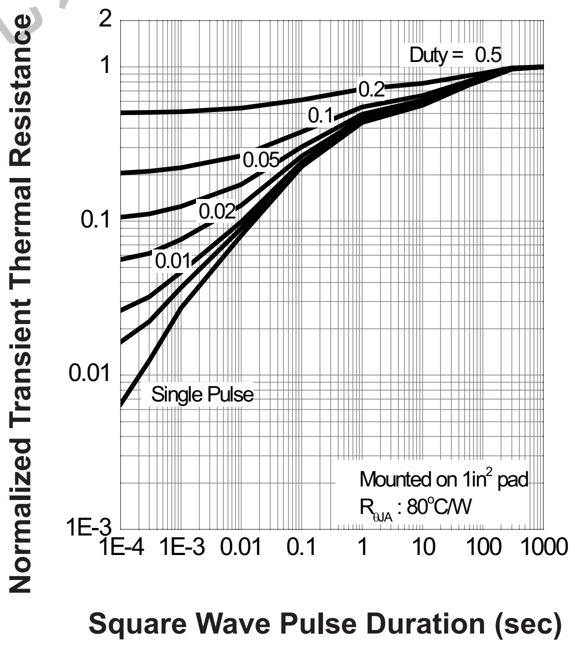
Drain Current

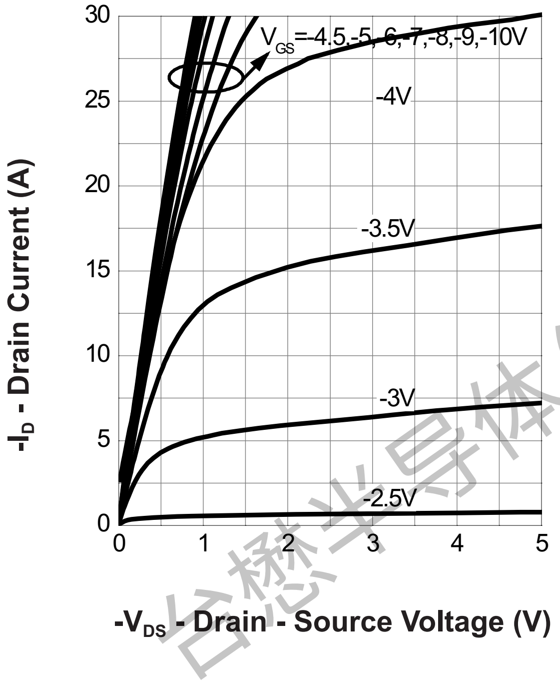


Safe Operation Area

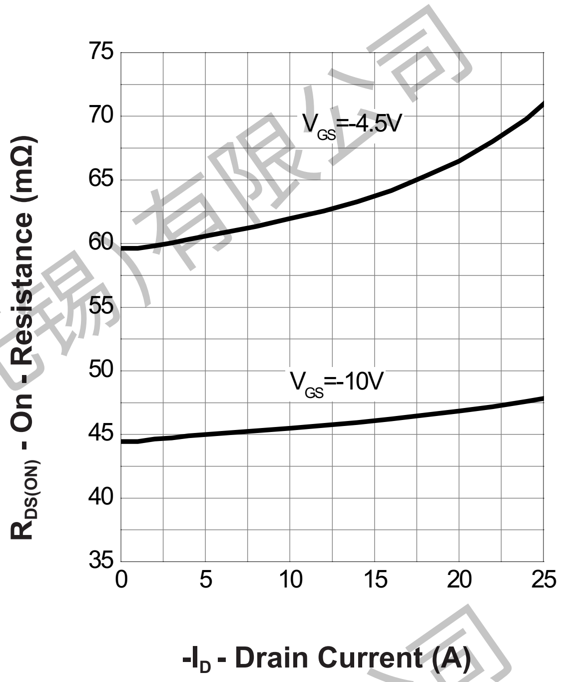


Thermal Transient Impedance

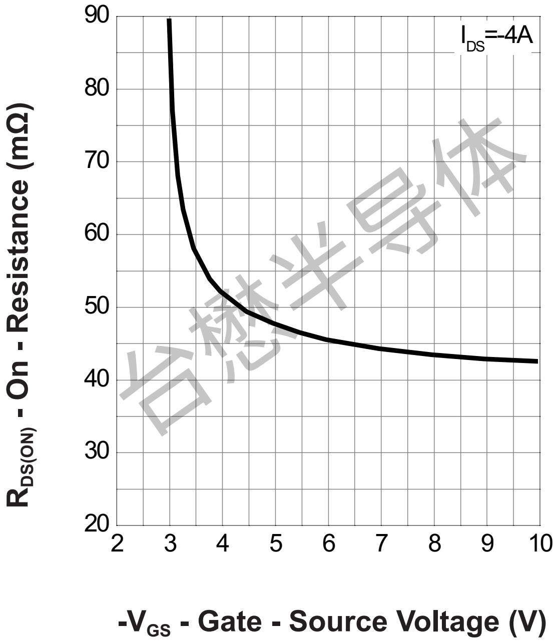




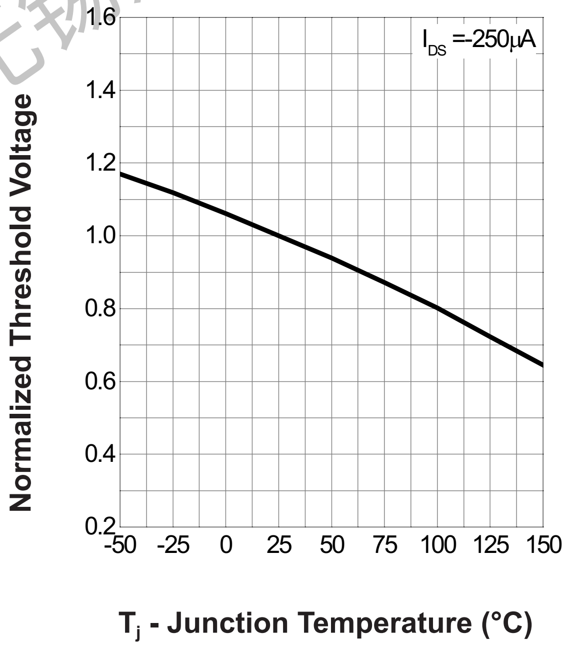
Output Characteristics



Drain-Source On Resistance

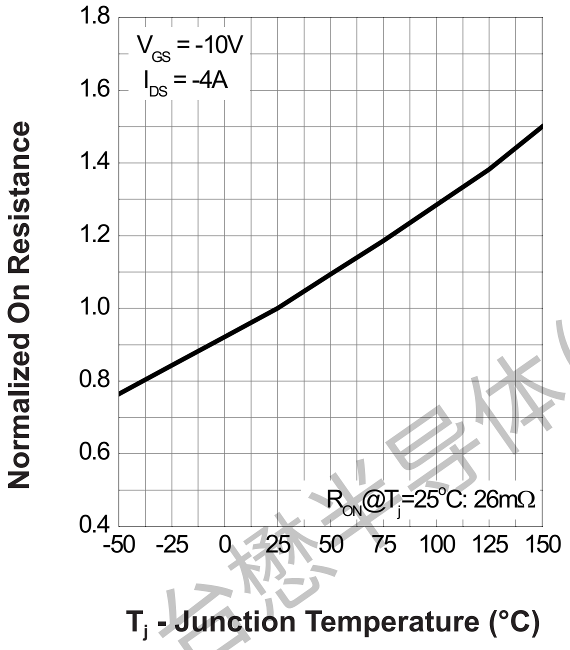


Gate-Source On Resistance

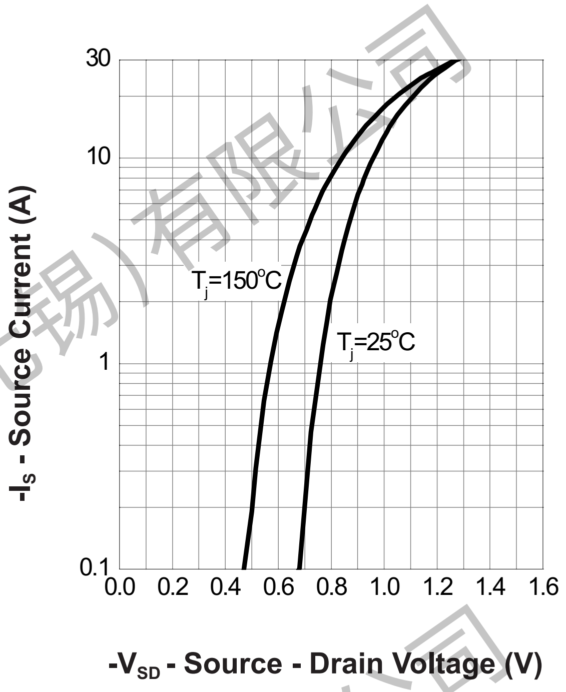


Gate Threshold Voltage

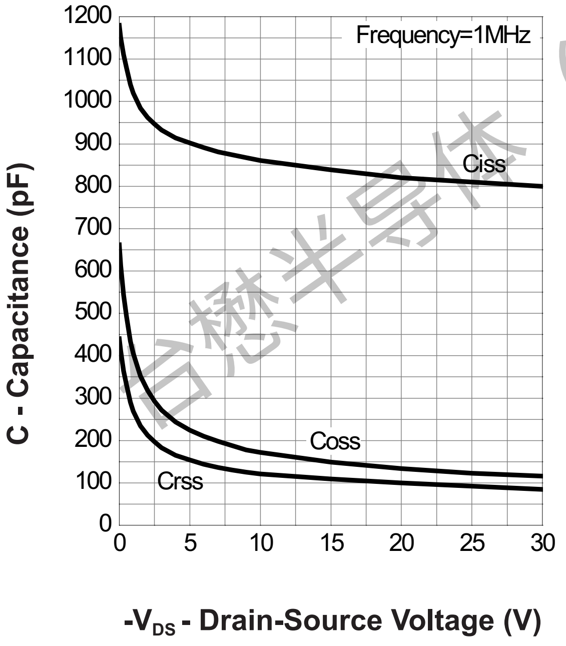
Drain-Source On Resistance



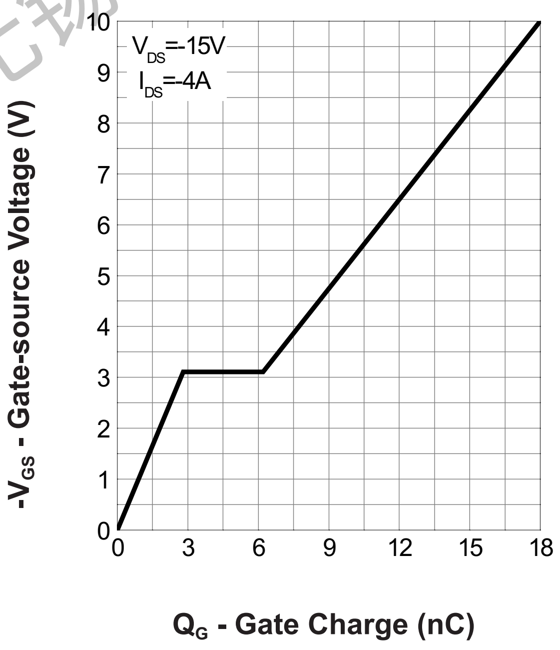
Source-Drain Diode Forward

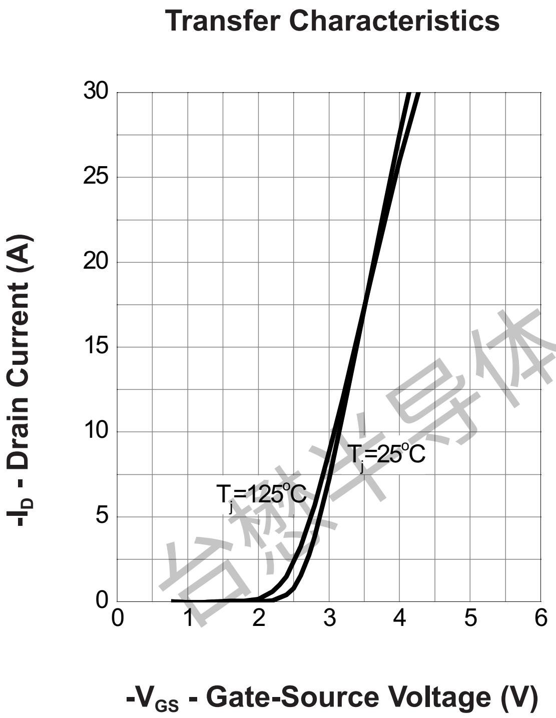


Capacitance

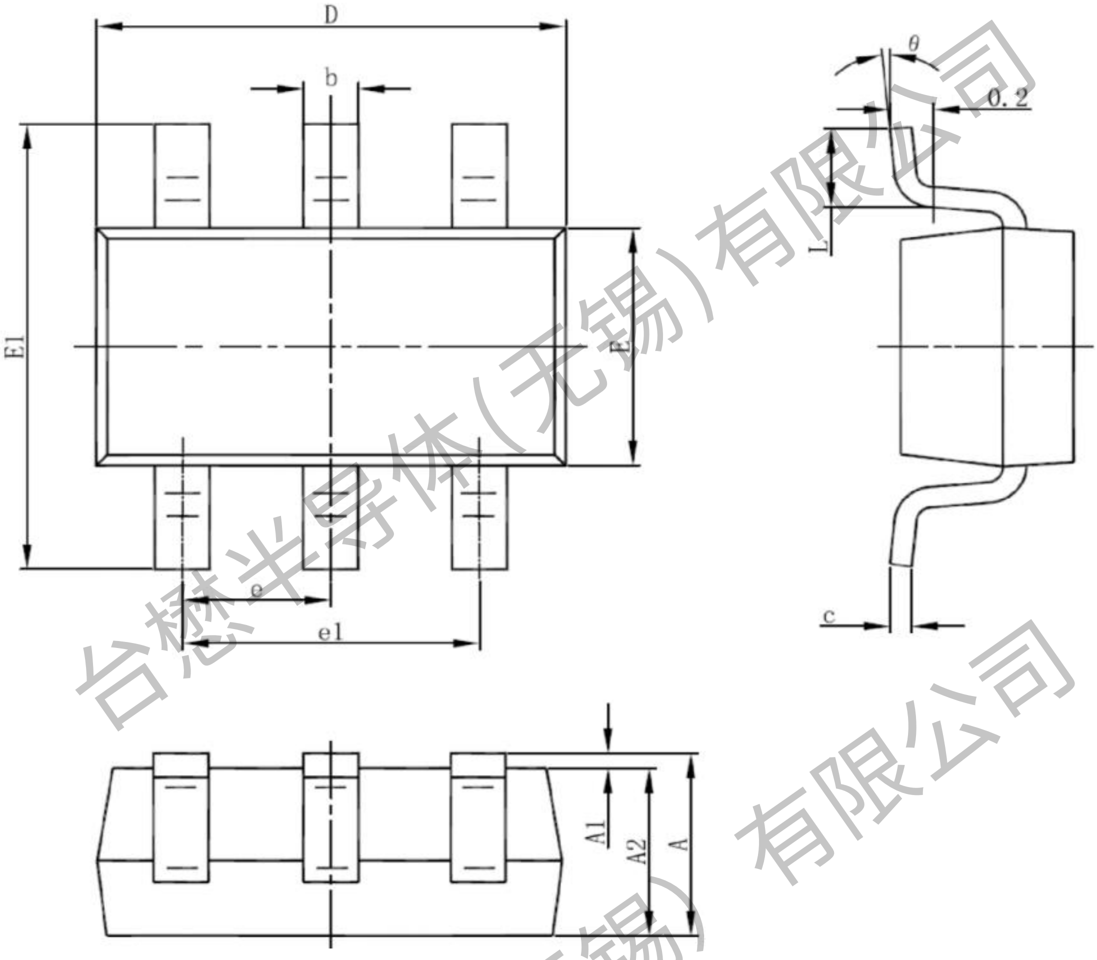


Gate Charge



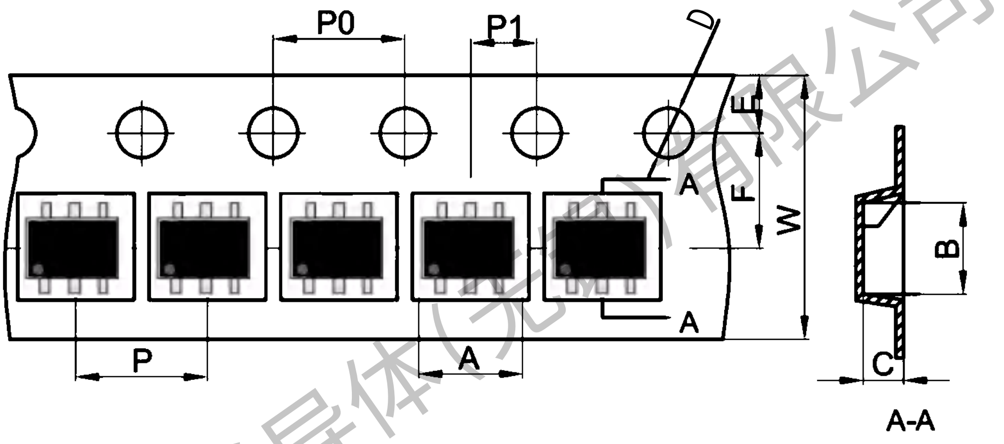

Transfer Characteristics
30
25
20
15
10
5
0
0
1
2
3
4
5
6
-I_D - Drain Current (A)
-V_GS - Gate-Source Voltage (V)
Tj=125℃
Tj=25℃

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°

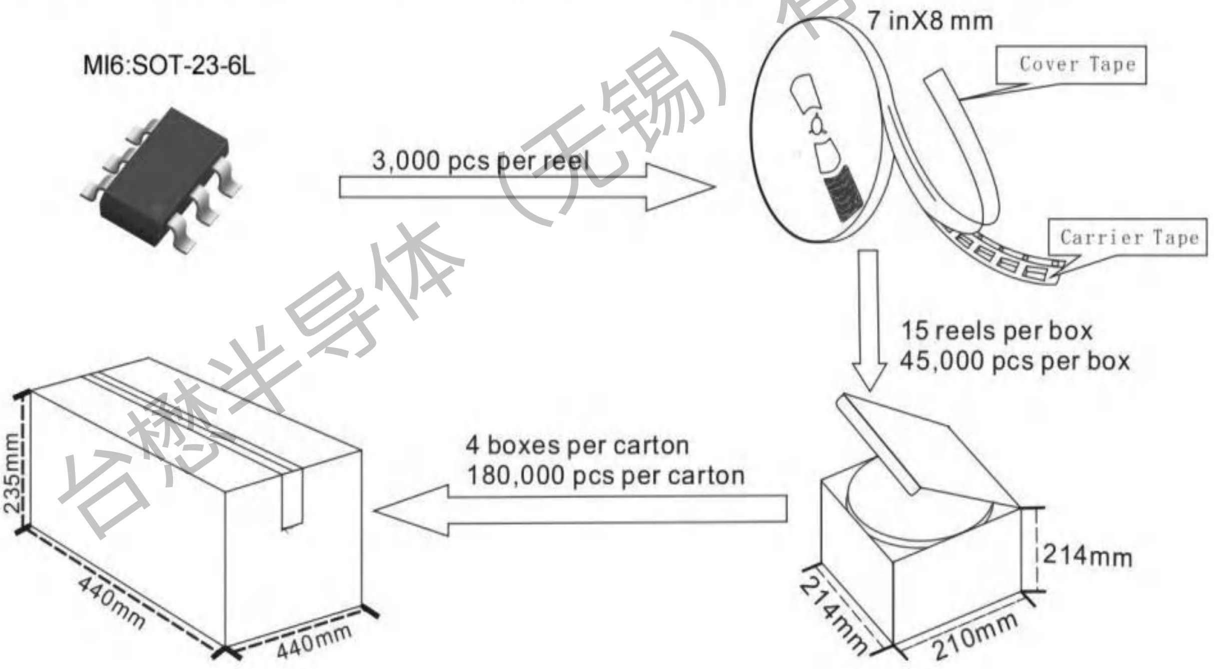
SOT-23-6L Embossed Carrier Tape



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	