TM08N018I

N-Channel Enhancement Mosfet

General Description

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

Applications

- Load switch
- PWM

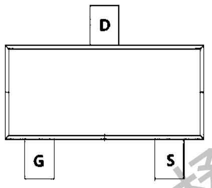
General Features

V_{DS} =18V I_D =8A

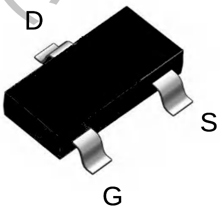
$R_{DS(ON)}$ = 13 mΩ (Typ.) @ V_{GS}=4.5V

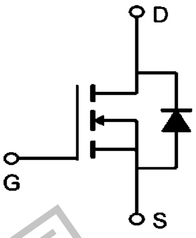
100% UIS Tested
100% R_g Tested

I:SOT-23



Marking: 1808





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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	18	V
V_{GS}	Gate-Source Voltage	±12	V
I_D@T_A=25˚C	Continuous Drain Current, V_{GS} @ 4.5V	8	A
I_D@T_A=70˚C	Continuous Drain Current, V_{GS} @ 4.5V	6	A
I_{DM}	Pulsed Drain Current	40	A
P_D@T_A=25˚C	Total Power Dissipation	1.4	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	---	46	˚C/W
$R_{θJC}$	Thermal Resistance Junction Case	---	---	˚C/W

Electrical Characteristics (T_J=25℃ unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	I_D = 250μA, V_{GS} = 0V	18	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 20V, V_{GS} = 0V	-	-	1.0	μA
I_{GSS}	Gate-Body Leakage Current	V_{DS} = 0V, V_{GS} = ±12V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	0.5	0.7	0.9	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance	V_{GS} = 4.5V, I_D = 10A	-	13	16	mΩ
		V_{GS} = 2.5V, I_D = 5A	-	17	20	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 10V, f = 1MHz	-	665	-	pF
C_{oss}	Output Capacitance		-	90	-	pF
C_{rss}	Reverse Transfer Capacitance		-	80	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 4.5V V_{DD} = 10V, I_D = 5A	-	13	-	nC
Q_{gs}	Gate Source Charge		-	2	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	3	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = 4.5V, V_{DD} = 10V I_D= 5A, R_{GEN} = 3Ω	-	7	-	ns
t_r	Turn-On Rise Time		-	25	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	34	-	ns
t_f	Turn-Off Fall Time		-	13	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	8	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	40	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = 10A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I_F = 5A, di/dt = 100A/us	-	10	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	2.7	-	nC

Typical Performance Characteristics

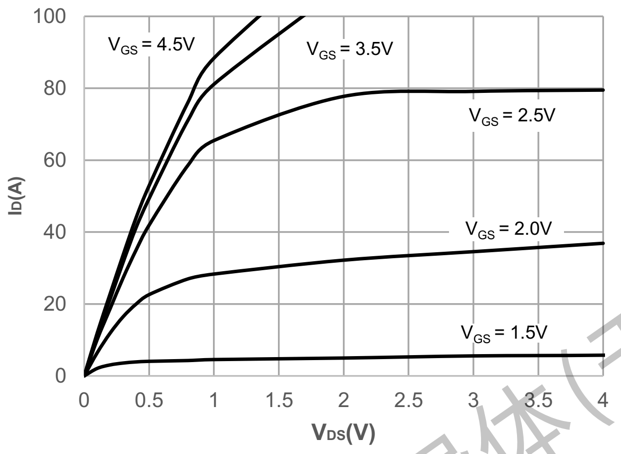


Figure 1: Output Characteristics

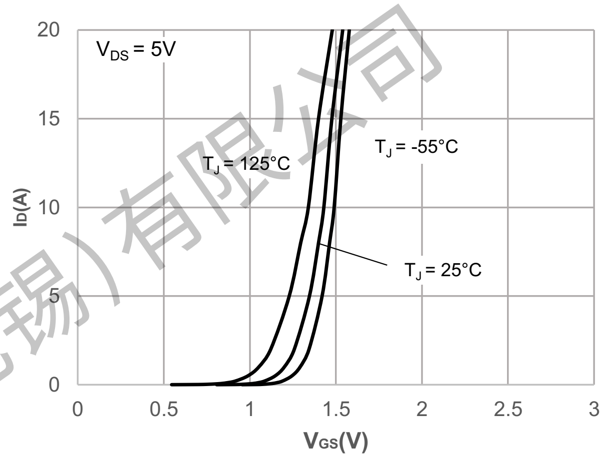


Figure 2: Typical Transfer Characteristics

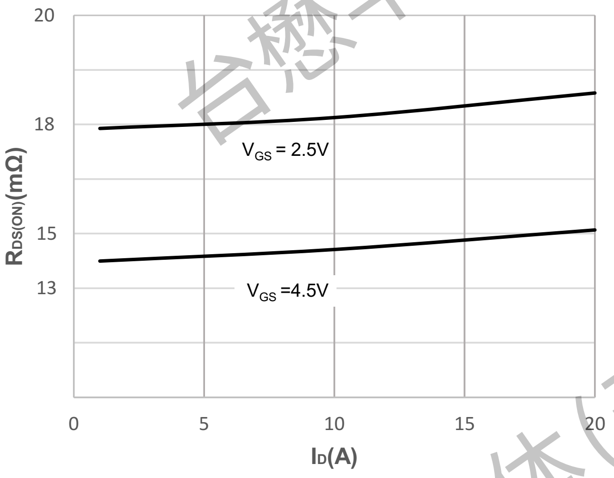


Figure 3: On-resistance vs. Drain Current

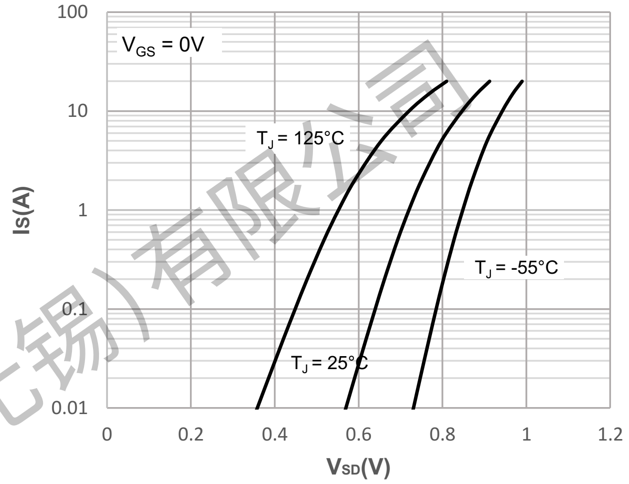


Figure 4: Body Diode Characteristics

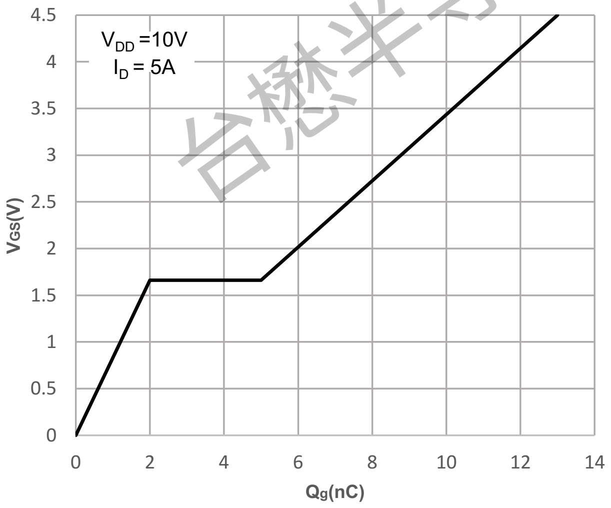


Figure 5: Gate Charge Characteristics

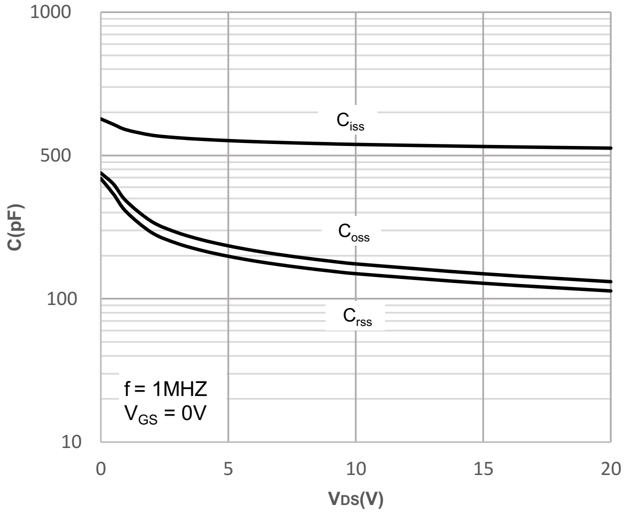


Figure 6: Capacitance Characteristics

Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

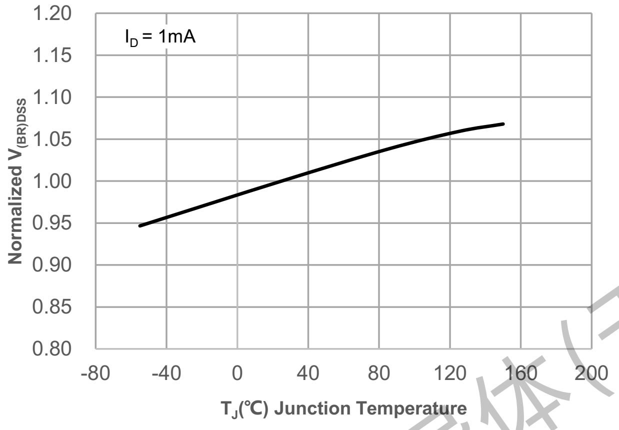


Figure 8: Normalized on Resistance vs. Junction Temperature

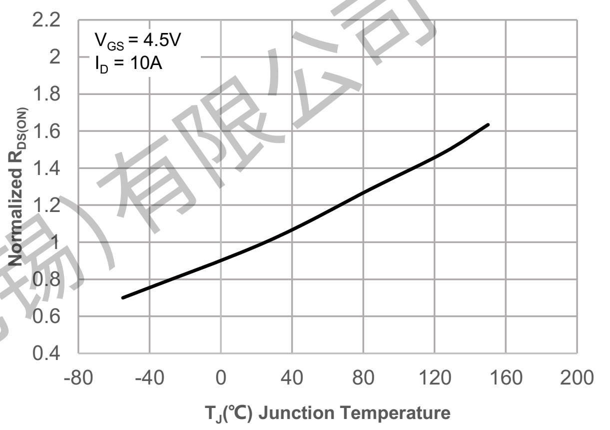


Figure 9: Maximum Safe Operating Area

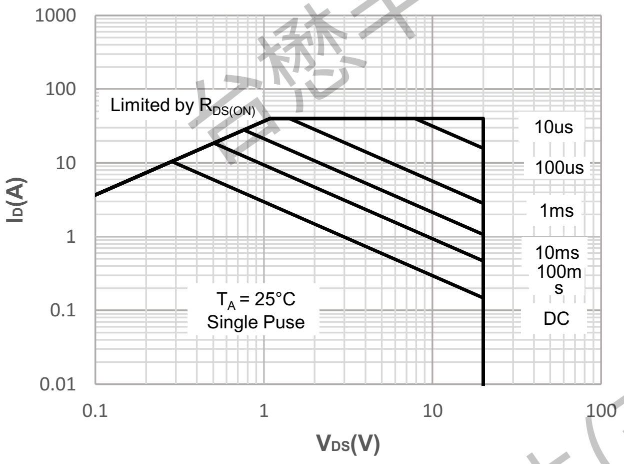


Figure 10: Maximum Continuous Drian Current vs. Ambient Temperature

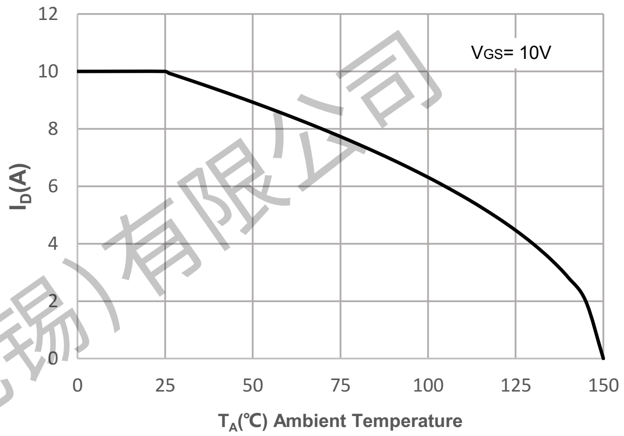


Figure 11: Normalized Maximum Transient Thermal Impedance

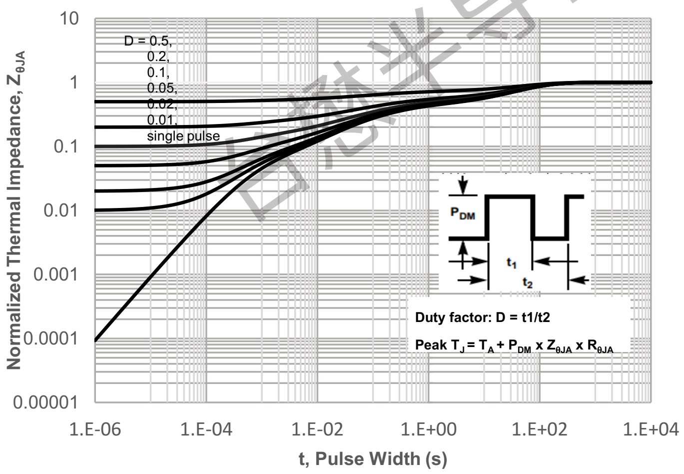
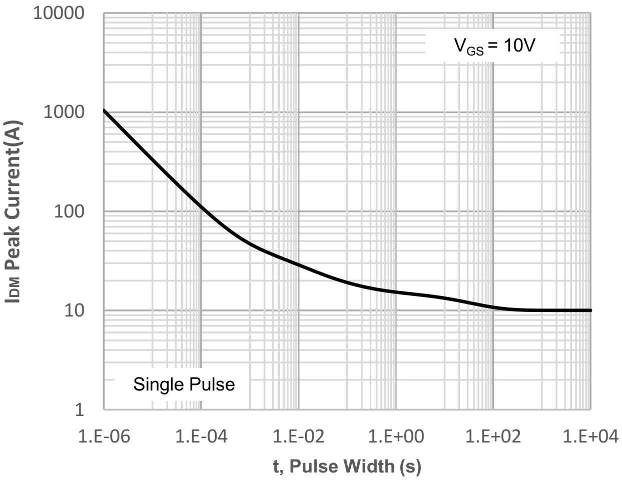
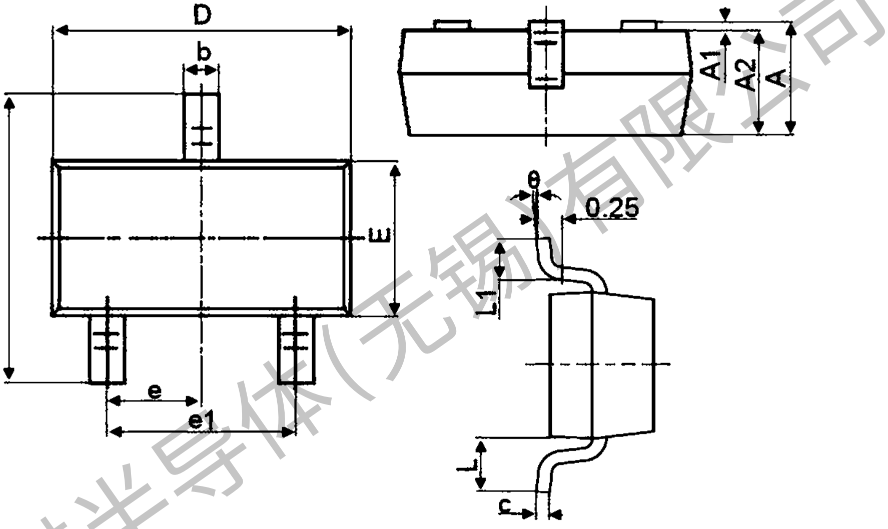


Figure 12: Peak Current Capacity



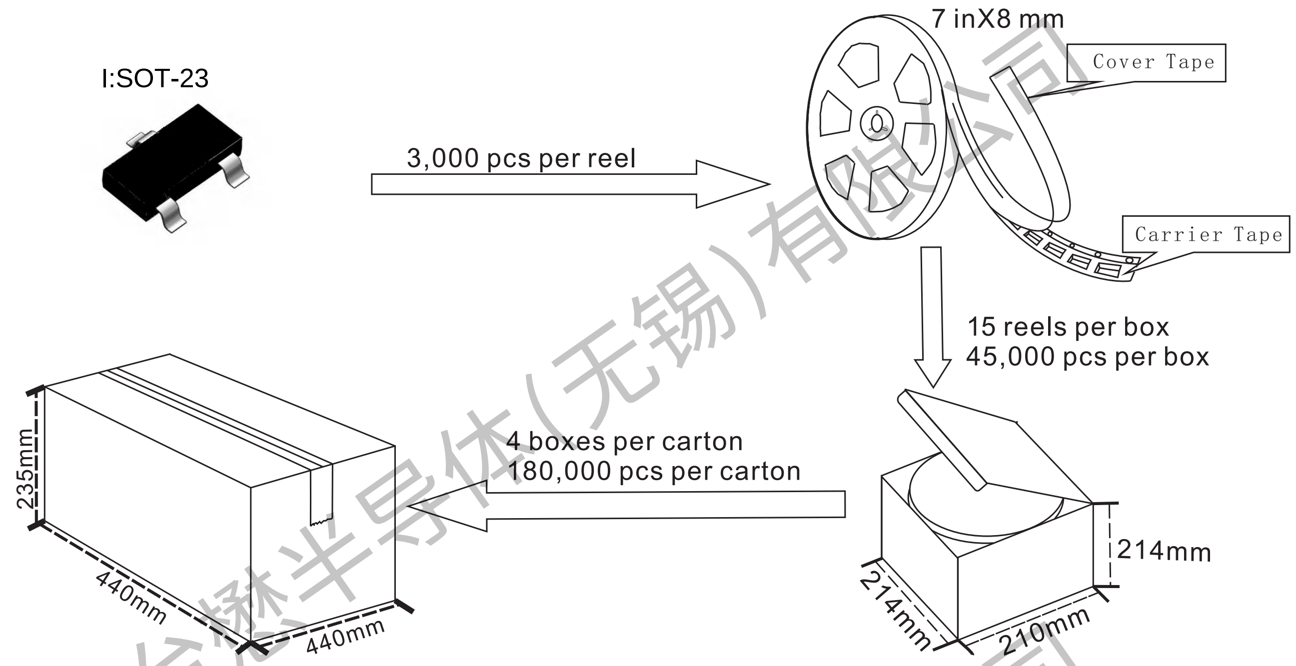
Package Mechanical Data:SOT-23



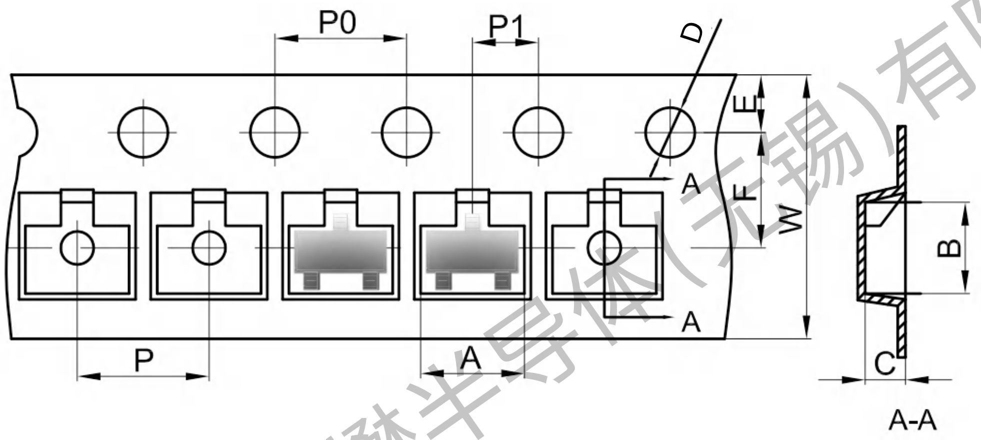
Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

SOT-23 Packing

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

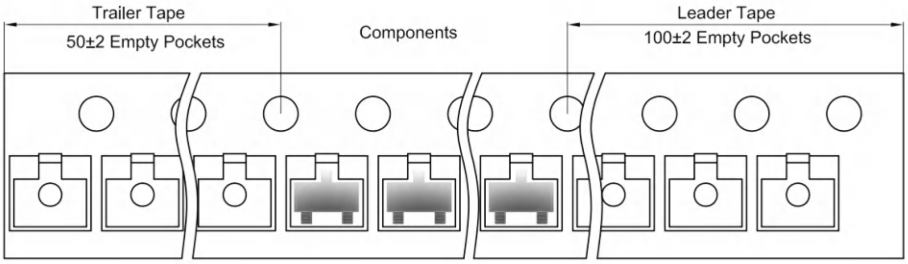


SOT-23 Embossed Carrier Tape



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

SOT-23 Tape Leader and Trailer



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Revision history:

Date	Rev	Description	Page
2023.08.09	23.08	Original	