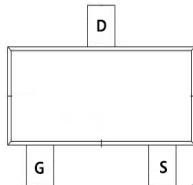
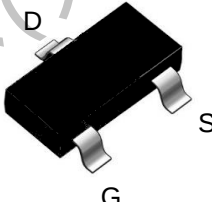
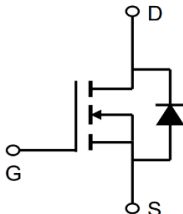




TM04N03I

N-Channel Enhancement Mosfet

General Description • Low R_{DS(ON)} • RoHS and Halogen-Free Compliant Applications • Load switch • PWM	General Features V _{DS} = 30V I _D =3.8A R _{DS(ON)} = 44mΩ @ V _{GS} =10V 100% UIS Tested 100% R _g Tested																																				
I: SOT-23  Marking: A6  																																					
<table><tr><th>Symbol</th><th>Parameter</th><th>Rating</th><th>Units</th></tr><tr><td>V_{DS}</td><td>Drain-Source Voltage</td><td>30</td><td>V</td></tr><tr><td>V_{GS}</td><td>Gate-Source Voltage</td><td>±20</td><td>V</td></tr><tr><td>I_D@T_A=25℃</td><td>Continuous Drain Current, V_{GS} @ 10V¹</td><td>3.8</td><td>A</td></tr><tr><td>I_D@T_A=70℃</td><td>Continuous Drain Current, V_{GS} @ 10V¹</td><td>2.6</td><td>A</td></tr><tr><td>I_{DM}</td><td>Pulsed Drain Current²</td><td>16.4</td><td>A</td></tr><tr><td>P_D@T_A=25℃</td><td>Total Power Dissipation³</td><td>1</td><td>W</td></tr><tr><td>T_{STG}</td><td>Storage Temperature Range</td><td>-55 to 150</td><td>℃</td></tr><tr><td>T_J</td><td>Operating Junction Temperature Range</td><td>-55 to 150</td><td>℃</td></tr></table>		Symbol	Parameter	Rating	Units	V _{DS}	Drain-Source Voltage	30	V	V _{GS}	Gate-Source Voltage	±20	V	I _D @T _A =25℃	Continuous Drain Current, V _{GS} @ 10V ¹	3.8	A	I _D @T _A =70℃	Continuous Drain Current, V _{GS} @ 10V ¹	2.6	A	I _{DM}	Pulsed Drain Current ²	16.4	A	P _D @T _A =25℃	Total Power Dissipation ³	1	W	T _{STG}	Storage Temperature Range	-55 to 150	℃	T _J	Operating Junction Temperature Range	-55 to 150	℃
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Electrical Characteristics (T_J=25°C 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	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =30V, 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	1.0	2.0	3.0	V
R _{DS(on)}	Static Drain-Source on-Resistance note2	V _{GS} =10V, I _D =4A		44	59	mΩ
		V _{GS} =4.5V, I _D =3A	-	60	65	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1.0MHz		183		pF
C _{oss}	Output Capacitance		-	44	-	pF
C _{rss}	Reverse Transfer Capacitance		-	33	-	pF
Q _g	Total Gate Charge	V _{DS} =15V, I _D =2A, V _{GS} =10V	-	3	-	nC
Q _{gs}	Gate-Source Charge		-	0.5	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	0.8	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DS} =15V, I _D =4A, R _{GEN} =3Ω, V _{GS} =10V	-	4	-	ns
t _r	Turn-on Rise Time		-	2.1	-	ns
t _{d(off)}	Turn-off Delay Time		-	15	-	ns
t _f	Turn-off Fall Time		-	3.2	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-		3.8	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	16	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =4A	-	-	1.2	V

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Performance Characteristics

Figure1: Output Characteristics

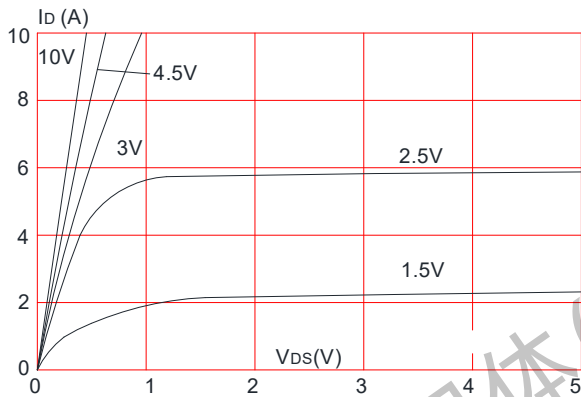


Figure 2: Typical Transfer Characteristics

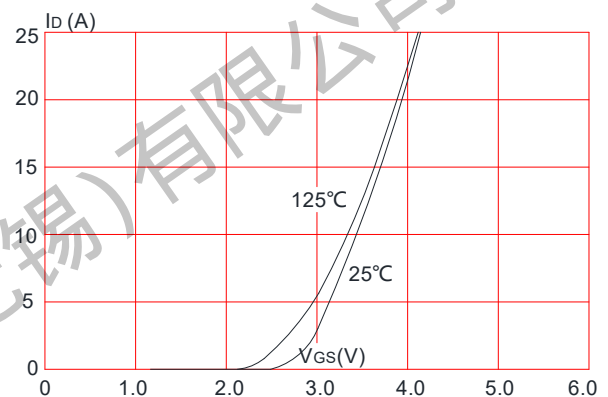


Figure 3: On-resistance vs. Drain Current

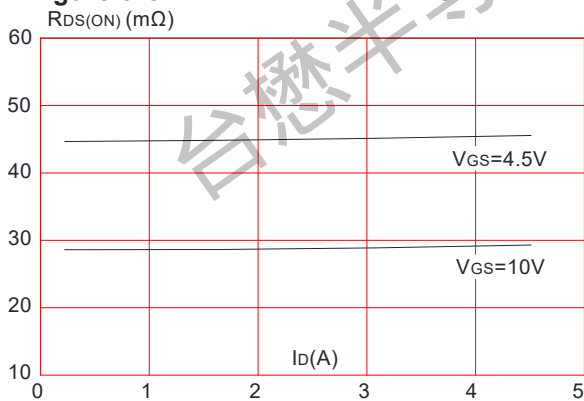


Figure 4: Body Diode Characteristics

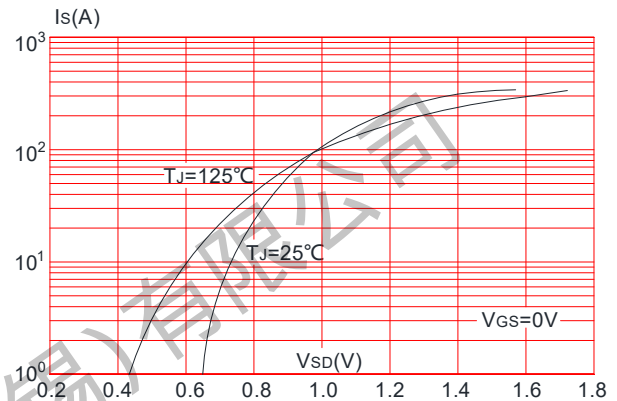


Figure 5: Gate Charge Characteristics

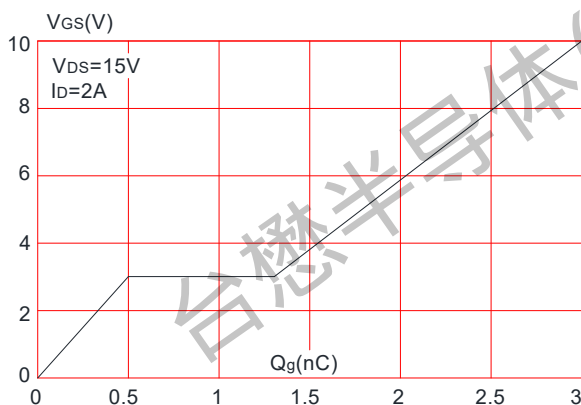
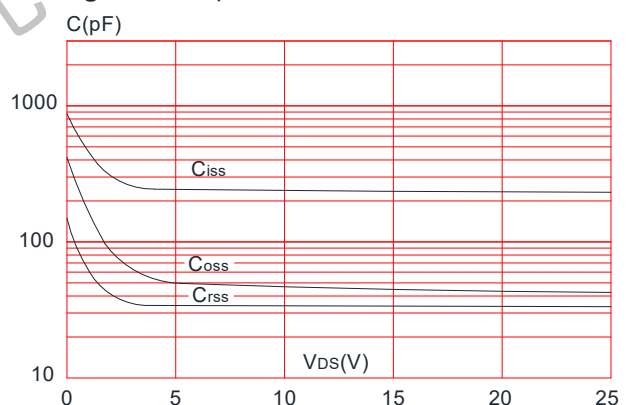


Figure 6: Capacitance Characteristics



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Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

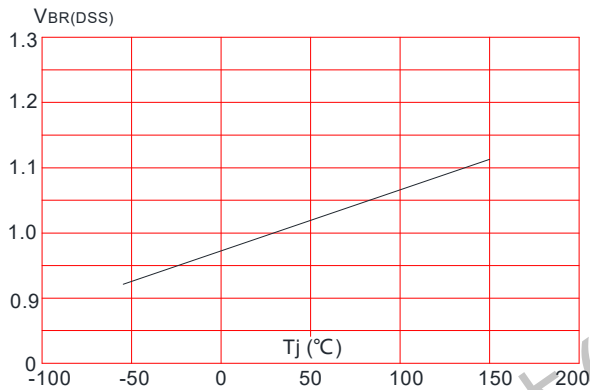


Figure 8: Normalized on Resistance vs. Junction Temperature

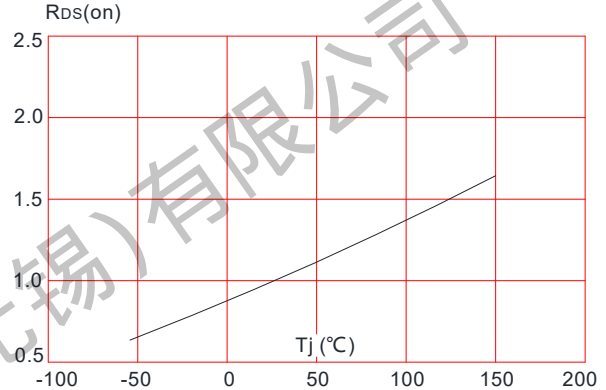


Figure 9: Maximum Safe Operating Area

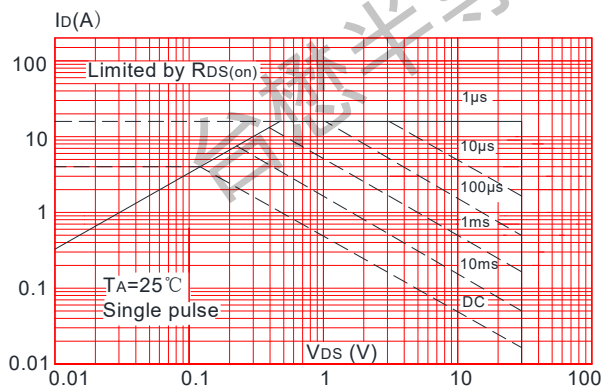


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

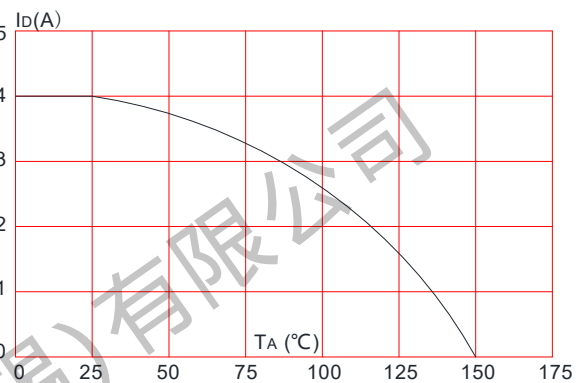
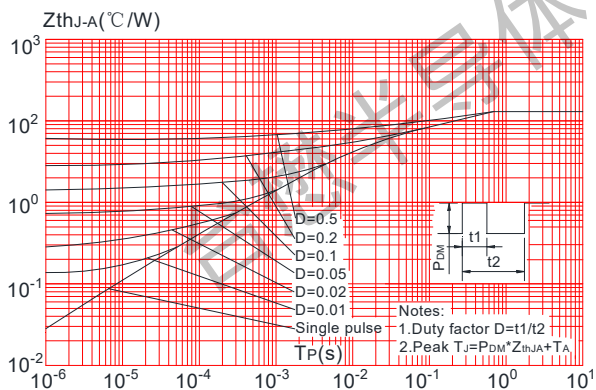


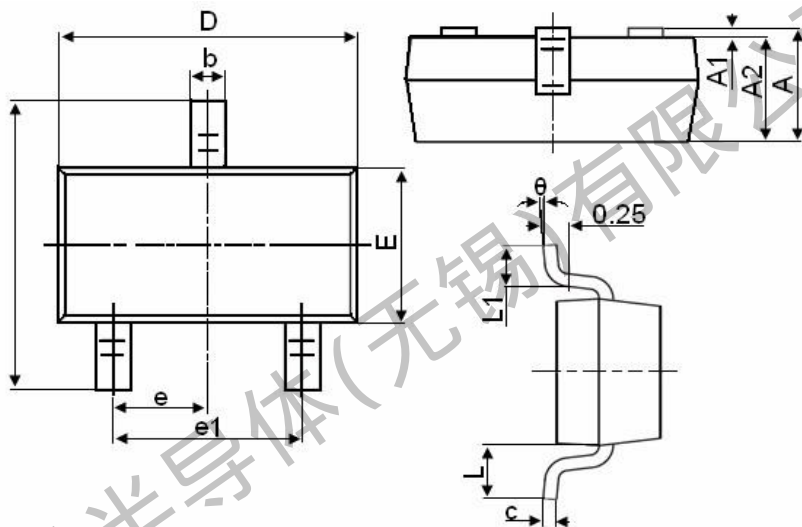
Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



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N-Channel Enhancement Mosfet

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°

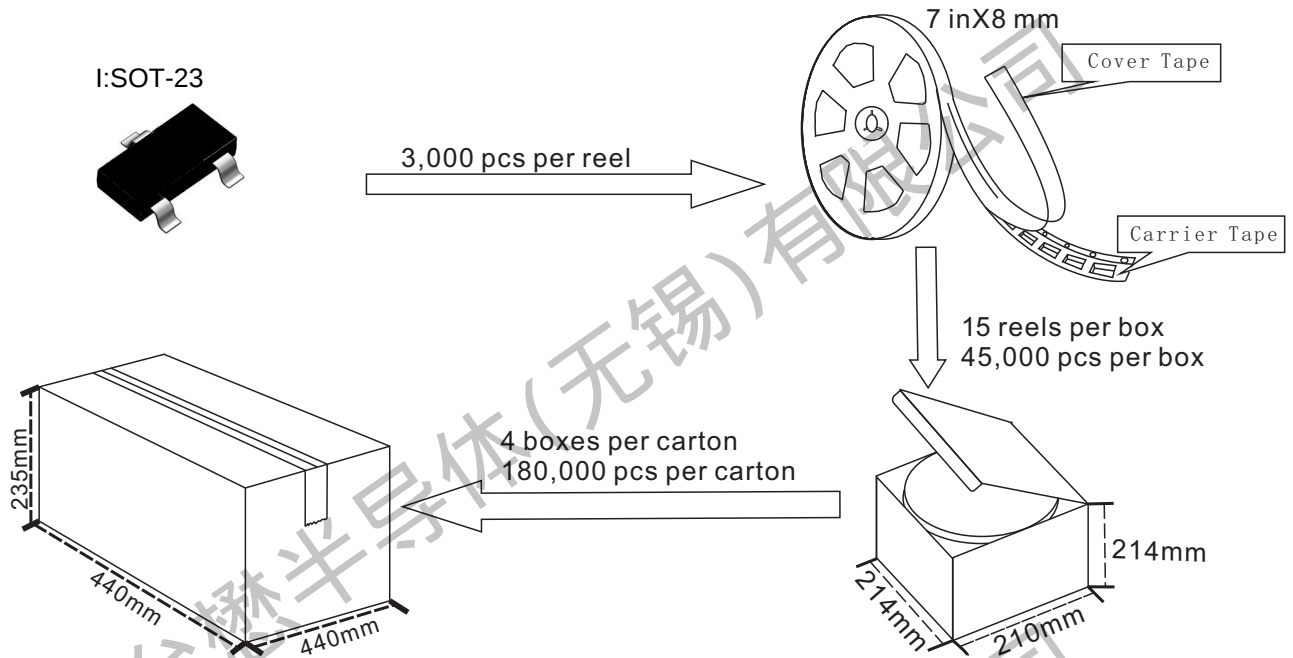


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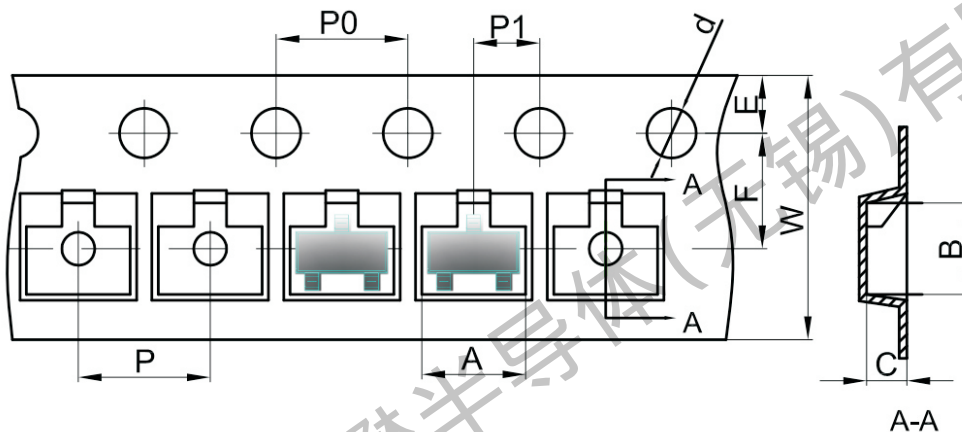
N-Channel Enhancement Mosfet

SOT-23 Packing

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

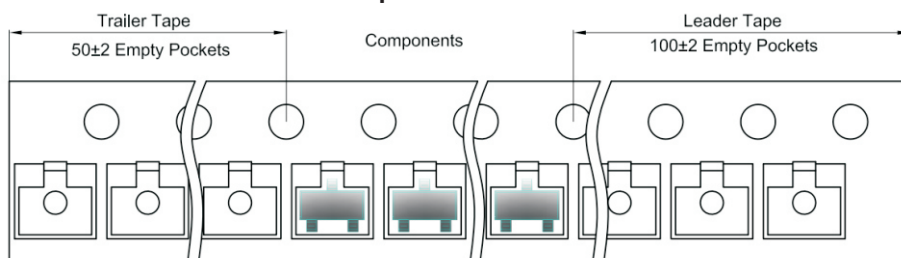


SOT-23 Embossed Carrier Tape



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
2023.05.10	23.05	Original	