
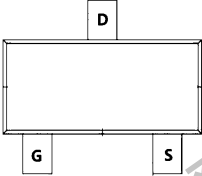
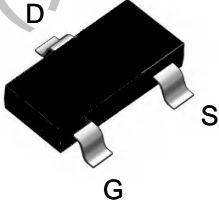
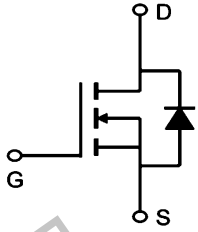


TM05N03I

N-Channel Enhancement Mosfet

<p>General Description</p> <ul style="list-style-type: none"> • Low $R_{DS(ON)}$ • RoHS and Halogen-Free Compliant <p>Applications</p> <ul style="list-style-type: none"> • Load switch • PWM 	<p>General Features</p> <p>$V_{DS} = 30V$ $I_D = 4.6A$ $R_{DS(ON)} = 32m\Omega$(typ.) @ $V_{GS} = 10V$</p> <p>100% UIS Tested 100% R_g Tested</p> 
--	---

I:SOT-23

Marking: 3400 OR A09T

Absolute Maximum Ratings (TA=25°C unless otherwise noted)				
Symbol	Parameter	Rating	Units	
V_{DS}	Drain-Source Voltage	30	V	
V_{GS}	Gate-Source Voltage	± 20	V	
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	4.6	A	
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	2.9	A	
I_{DM}	Pulsed Drain Current ²	17.1	A	
$P_D @ T_A = 25^\circ C$	Total Power Dissipation ³	1.1	W	
T_{STG}	Storage Temperature Range	-55 to 150	°C	
T_J	Operating Junction Temperature Range	-55 to 150	°C	
Thermal Data				
Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient ¹	---	162	°C/W
R_{JC}	Thermal Resistance Junction Case ¹	---	---	°C/W

TM05N03I
N-Channel Enhancement Mosfet
Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	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	$V_{DS}=0V, V_{GS}=\pm 12V$	-	-	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.9	1.2	1.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note2	$V_{GS}=10V, I_D=4A$	-	32	42	m Ω
		$V_{GS}=4.5V, I_D=3A$	-	36	48	
		$V_{GS}=2.5V, I_D=2A$	-	---	---	
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V,$ $f=1.0MHz$	-	285	-	pF
C_{oss}	Output Capacitance		-	33	-	pF
C_{rss}	Reverse Transfer Capacitance		-	27	-	pF
Q_g	Total Gate Charge	$V_{DS}=15V, I_D=4A,$ $V_{GS}=4.5V$	-	2.6	-	nC
Q_{gs}	Gate-Source Charge		-	0.6	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	0.9	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{DS}=15V,$ $I_D=2A, R_{GEN}=3\Omega,$ $V_{GS}=4.5V$	-	15	-	ns
t_r	Turn-on Rise Time		-	42	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	16	-	ns
t_f	Turn-off Fall Time		-	10	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	4.6	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	17	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 $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

Typical Performance Characteristics

Figure 1: Output Characteristics

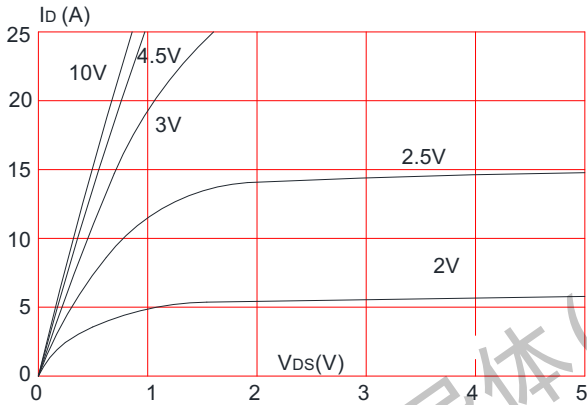


Figure 2: Typical Transfer Characteristics

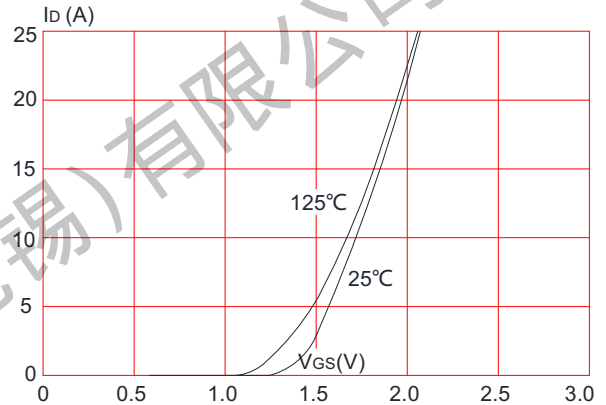


Figure 3: On-resistance vs. Drain Current

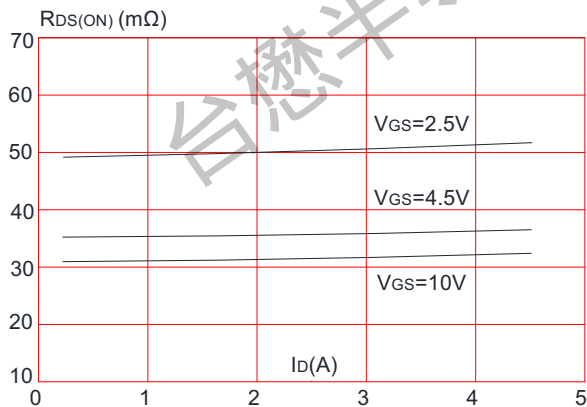


Figure 4: Body Diode Characteristics

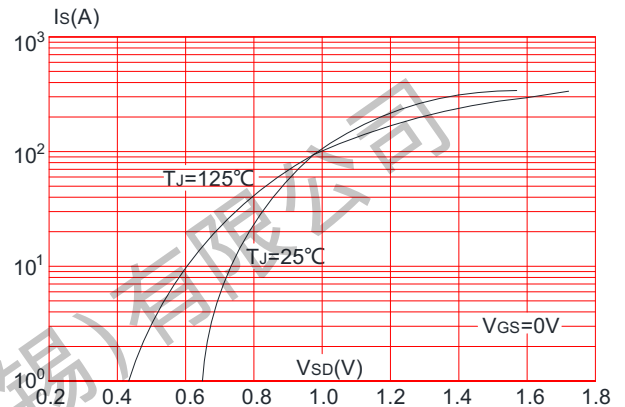


Figure 5: Gate Charge Characteristics

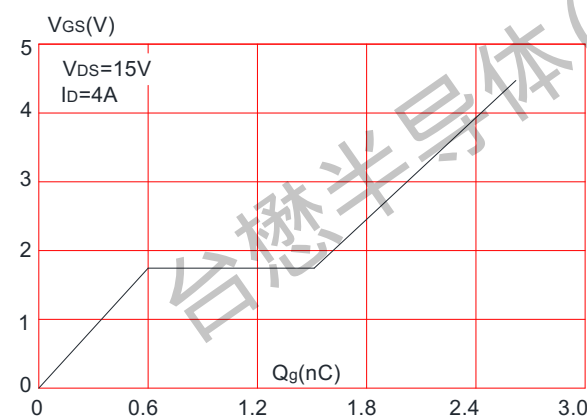
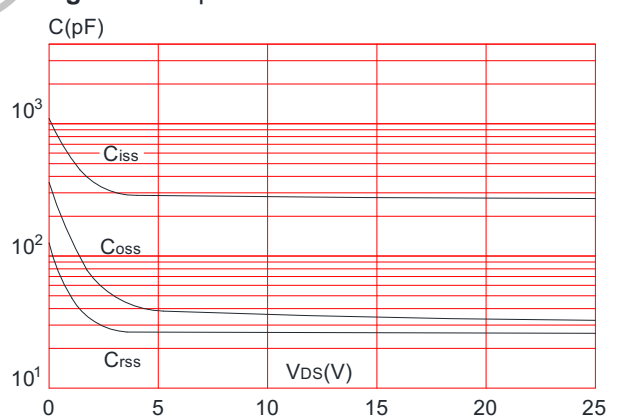


Figure 6: Capacitance Characteristics





TM05N03I

N-Channel Enhancement Mosfet

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

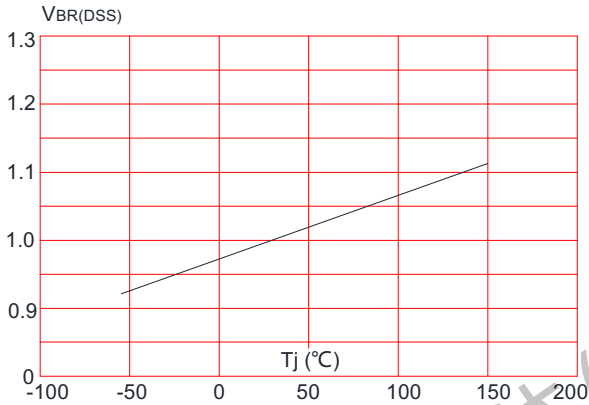


Figure 8: Normalized on Resistance vs. Junction Temperature

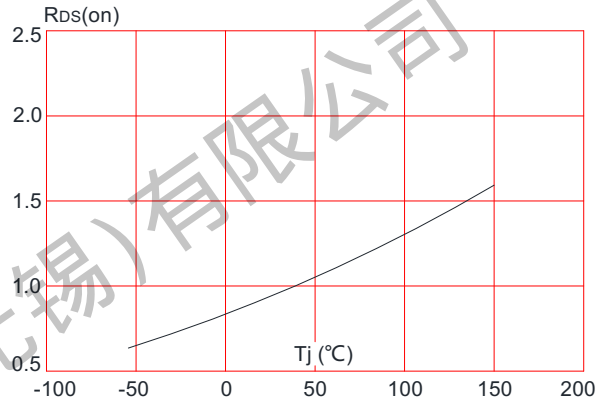


Figure 9: Maximum Safe Operating Area

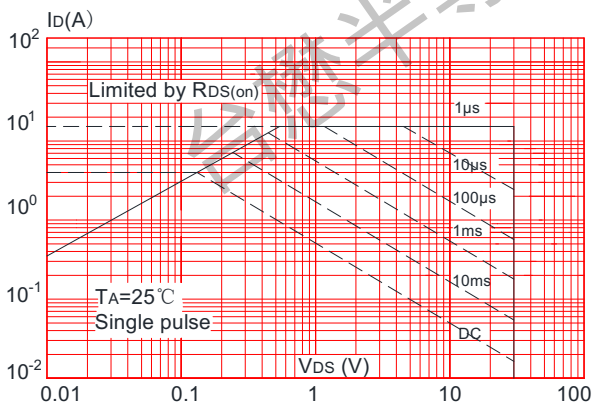


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

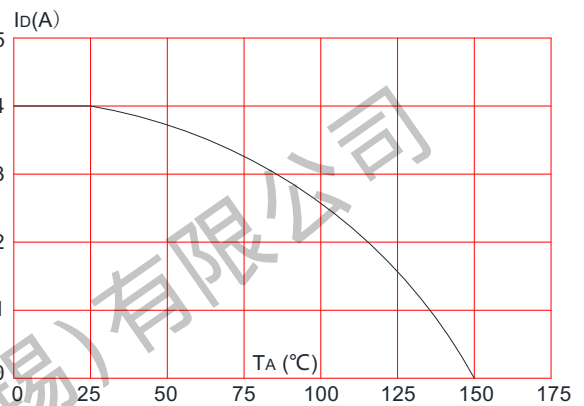
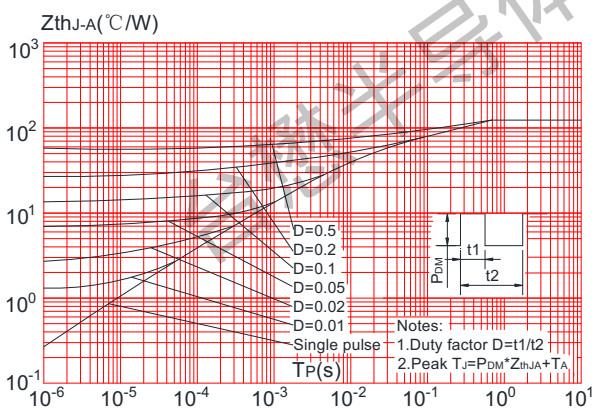


Figure 11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

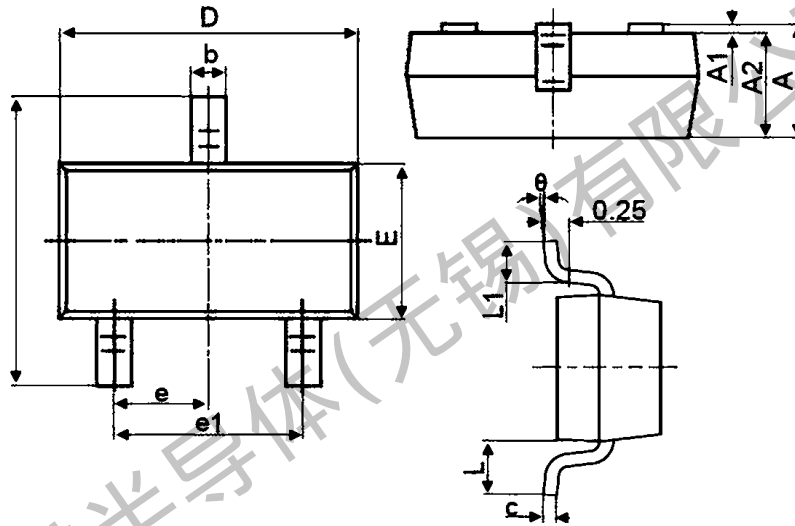




TM05N03I

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°

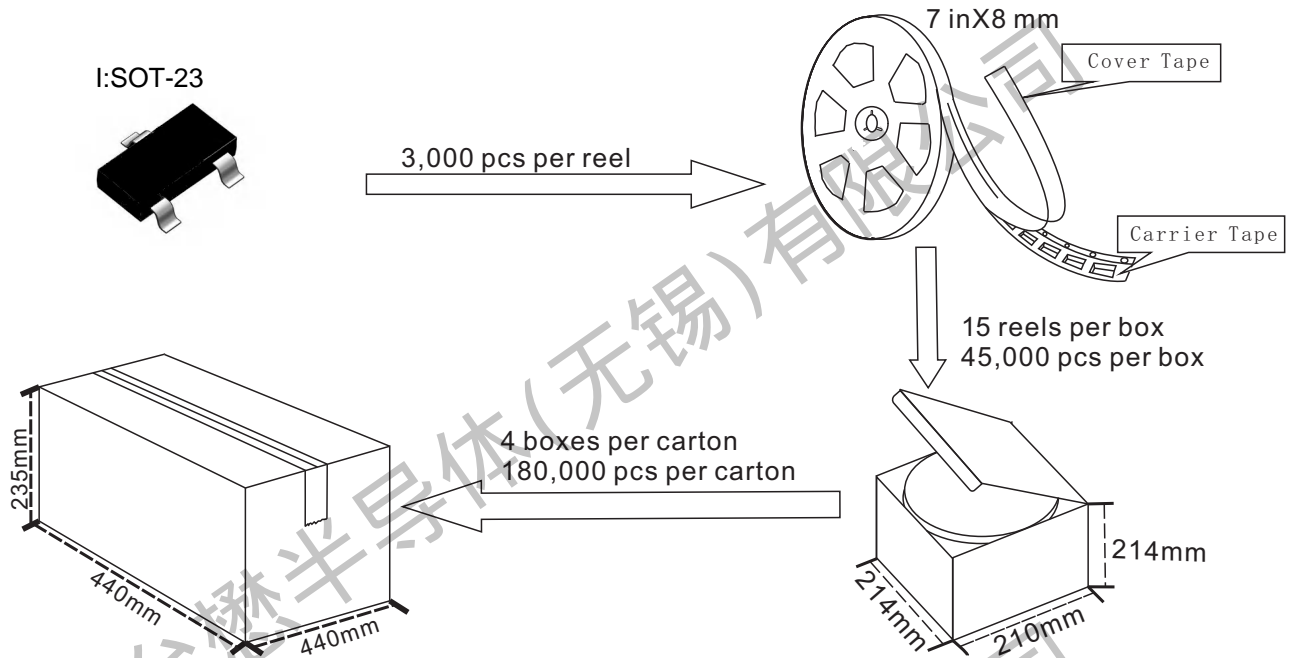


TM05N03I

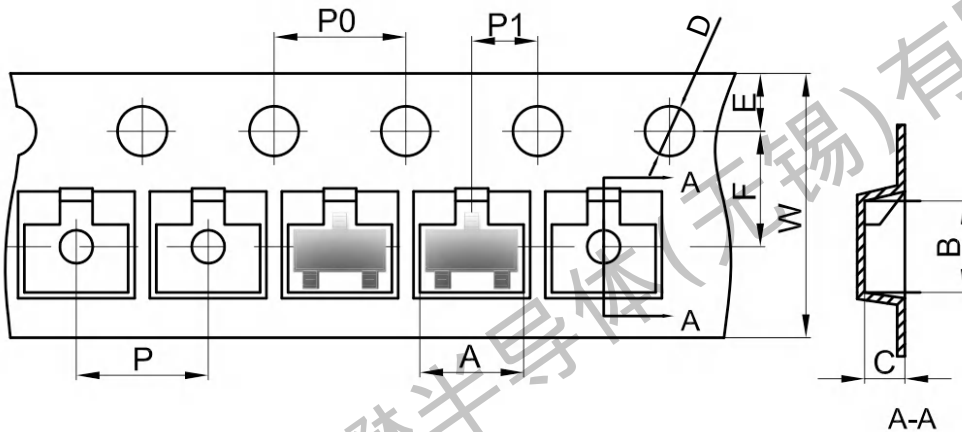
N-Channel Enhancement Mosfet

SOT-23 Packing

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



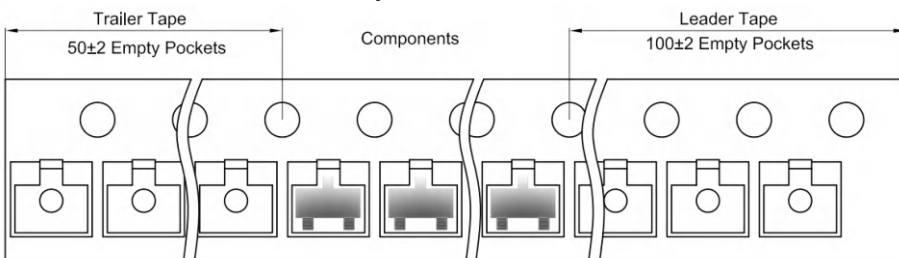
SOT-23 Embossed Carrier Tape



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





Important Notices and Disclaimers

- Tritech-MOS Technology Corp. reserves the right to change this document, its products, and specifications at any time without prior notice.
- Before final design, purchase, or use, customers should obtain and confirm the latest product information and specifications.
- Tritech-MOS Technology Corp. makes no warranties, representations or warranties regarding the suitability of its products for any specific purpose, and Tritech-MOS Technology Corp. does not assume any responsibility for application assistance or customer product design.
- Tritech-MOS Technology Corp. does not guarantee or assume any responsibility for the purchase or use of any unexpected or unauthorized products.
- Any intellectual property rights of Tritech-MOS Technology Corp. are not licensed through implicate or other means.
- Products of Tritech-MOS Technology Corp. are not included as critical components in life support equipment or systems without explicit written approval from Tritech-MOS Technology Corp.

Revision history:

Date	Rev	Description	Page
2023.04.09	23.04	Original	