


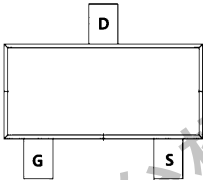
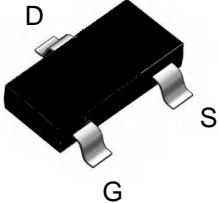
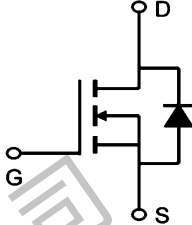


**TM06N03I**

**N-Channel Enhancement Mosfet**

<p><b>General Description</b></p> <ul style="list-style-type: none"> <li>• Low R<sub>DS(ON)</sub></li> <li>• RoHS and Halogen-Free Compliant</li> </ul> <p><b>Applications</b></p> <ul style="list-style-type: none"> <li>• Load switch</li> <li>• PWM</li> </ul>	<p><b>General Features</b></p> <p>V<sub>DS</sub> = 30V I<sub>D</sub> =5.8A R<sub>DS(ON)</sub> = 25mΩ @ V<sub>GS</sub>=10V</p> <p>100% UIS Tested 100% R<sub>g</sub> Tested</p> 
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I:SOT-23

Marking:3400 OR A09T

**Absolute Maximum Ratings (T<sub>C</sub>=25°C unless otherwise noted)**

Symbol	Parameter	Rating	Units
V <sub>DS</sub>	Drain-Source Voltage	30	V
V <sub>GS</sub>	Gate-Source Voltage	±20	V
I <sub>D</sub> @T <sub>A</sub> =25°C	Continuous Drain Current, V <sub>GS</sub> @ 10V	5.8	A
I <sub>D</sub> @T <sub>A</sub> =70°C	Continuous Drain Current, V <sub>GS</sub> @ 10V	4.2	A
I <sub>DM</sub>	Pulsed Drain Current	23.4	A
P <sub>D</sub> @T <sub>A</sub> =25°C	Total Power Dissipation	1.5	W
T <sub>STG</sub>	Storage Temperature Range	-55 to 150	°C
T <sub>J</sub>	Operating Junction Temperature Range	-55 to 150	°C

**Thermal Data**

Symbol	Parameter	Typ.	Max.	Unit
R <sub>θJA</sub>	Thermal Resistance Junction-ambient	---	162	°C/W
R <sub>θJC</sub>	Thermal Resistance Junction Case			°C/W

## TM06N03I

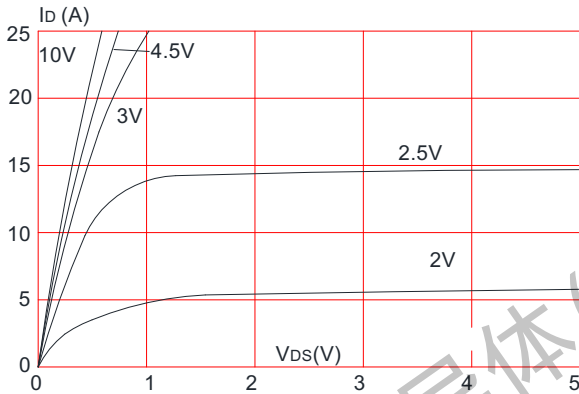
## N-Channel Enhancement Mosfet

### Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise specified)

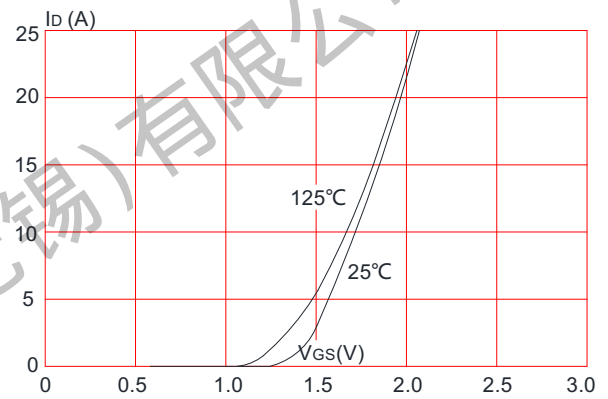
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	30	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V,	-	-	1.0	μA
I <sub>GSS</sub>	Gate to Body Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V	-	-	±100	nA
<b>On Characteristics</b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.9	1.2	1.5	V
R <sub>DS(on)</sub>	Static Drain-Source on-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =4.2A	-	25	27	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =4A	-	28	32	
<b>Dynamic Characteristics</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1.0MHz	-	602	-	pF
C <sub>oss</sub>	Output Capacitance		-	56	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	42	-	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =15V, I=4A, V <sub>GS</sub> =4.5V	-	4.8	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	1.2	-	nC
Q <sub>gd</sub>	Gate-Drain("Miller") Charge		-	1.7	-	nC
<b>Switching Characteristics</b>						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DS</sub> =15V, I <sub>D</sub> =4A, R <sub>GEN</sub> =3Ω, V <sub>GS</sub> =4.5V	-	12	-	ns
t <sub>r</sub>	Turn-on Rise Time		-	52	-	ns
t <sub>d(off)</sub>	Turn-off Delay Time		-	17	-	ns
t <sub>f</sub>	Turn-off Fall Time		-	10	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
I <sub>S</sub>	Maximum Continuous Drain to Source Diode Forward Current		-	-	5.8	A
I <sub>SM</sub>	Maximum Pulsed Drain to Source Diode Forward Current		-	-	23.2	A
V <sub>SD</sub>	Drain to Source Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =5.8A	-	-	1.2	V

**Typical Performance Characteristics**

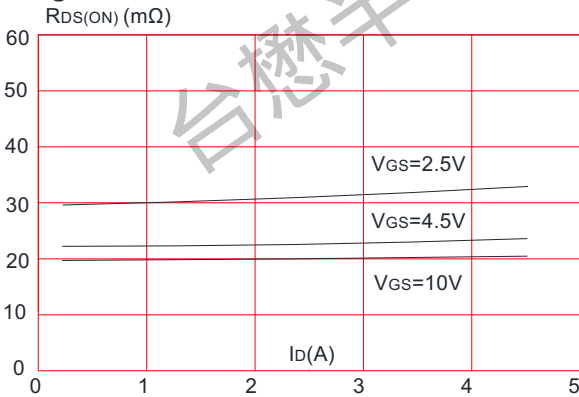
**Figure 1: Output Characteristics**



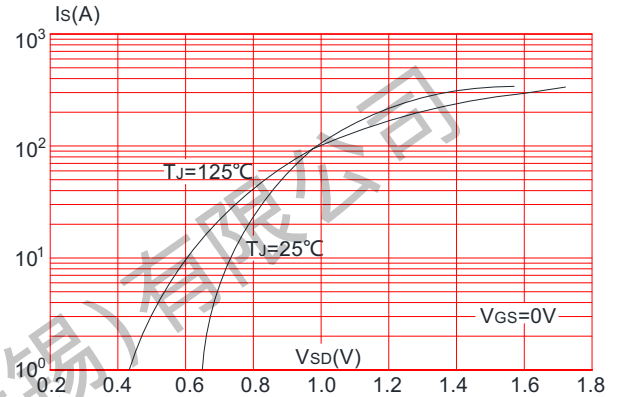
**Figure 2: Typical Transfer Characteristics**



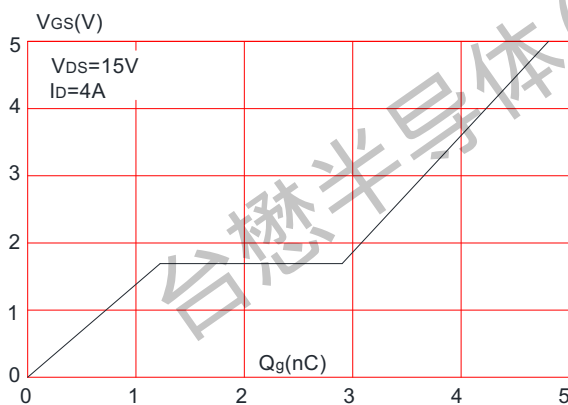
**Figure 3: On-resistance vs. Drain Current**



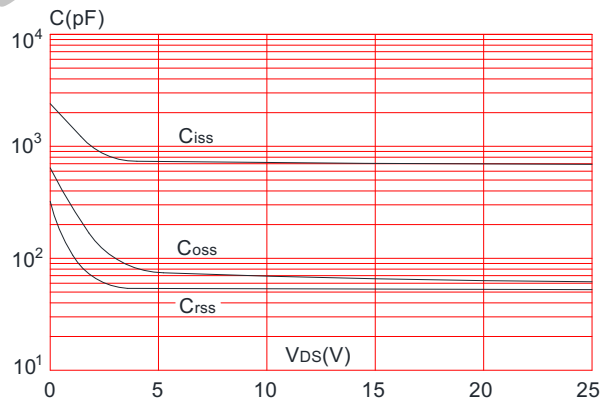
**Figure 4: Body Diode Characteristics**



**Figure 5: Gate Charge Characteristics**



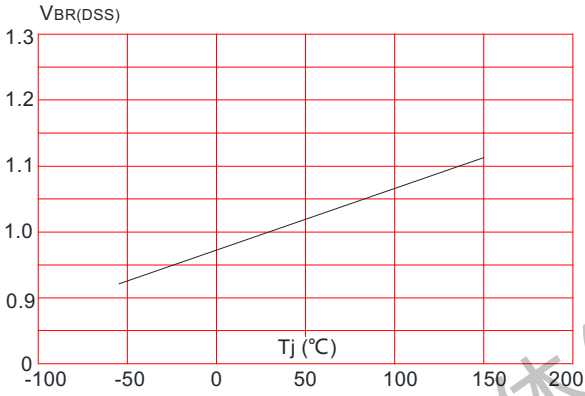
**Figure 6: Capacitance Characteristics**



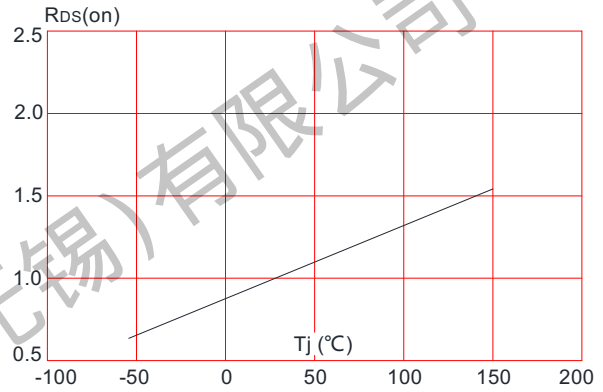
**TM06N03I**

**N-Channel Enhancement Mosfet**

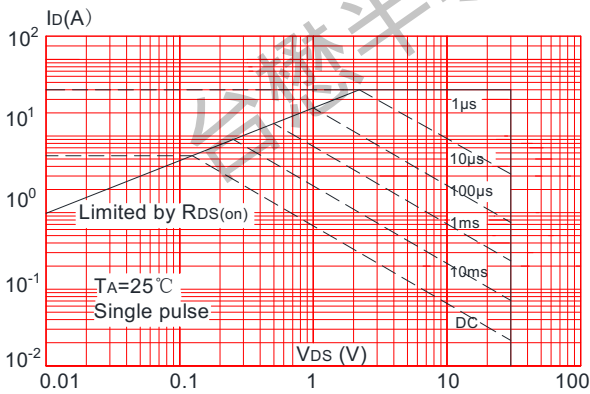
**Figure 7: Normalized Breakdown Voltage vs. Junction Temperature**



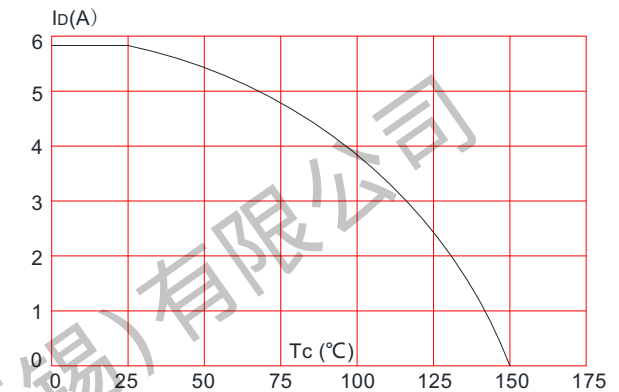
**Figure 8: Normalized on Resistance vs. Junction Temperature**



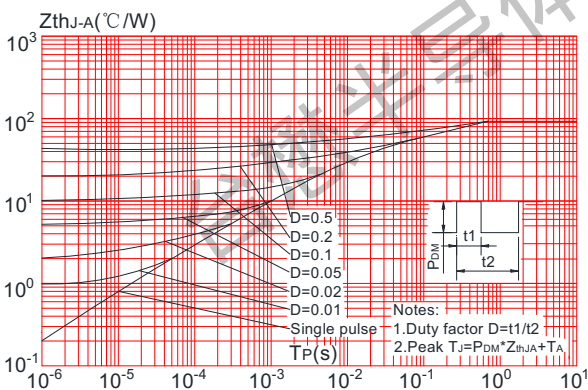
**Figure 9: Maximum Safe Operating Area**



**Figure 10: Maximum Continuous Drain Current vs. Case Temperature**



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

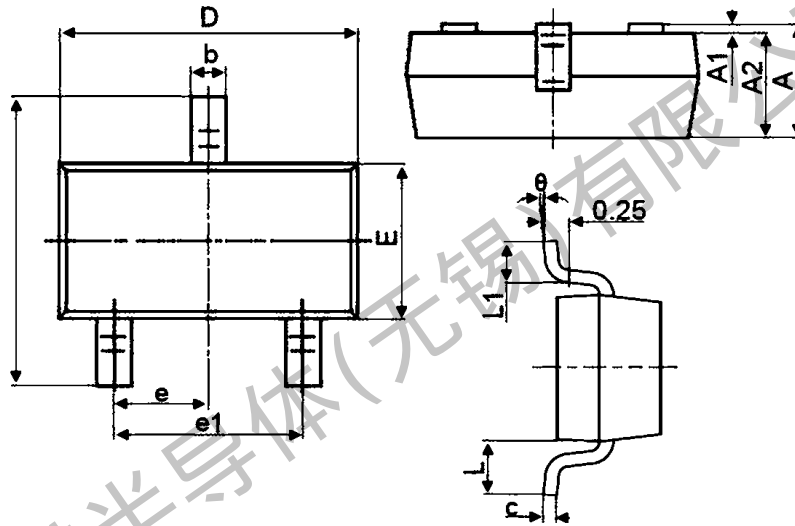




TM06N03I

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°

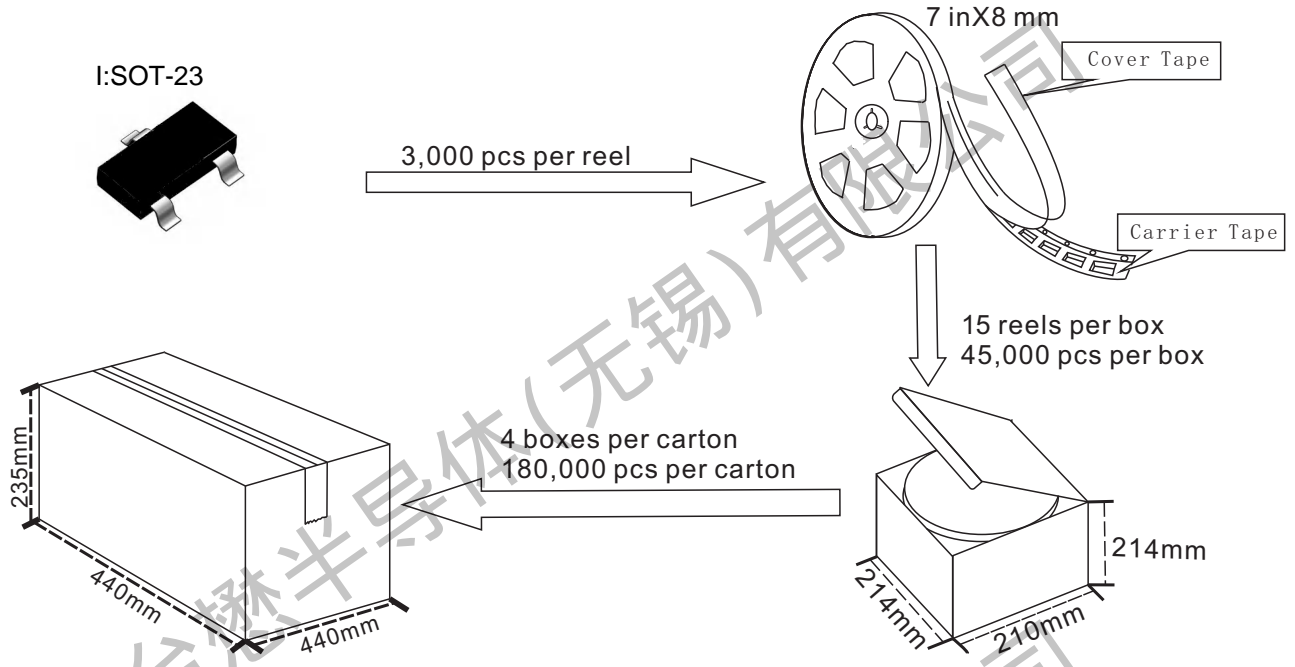


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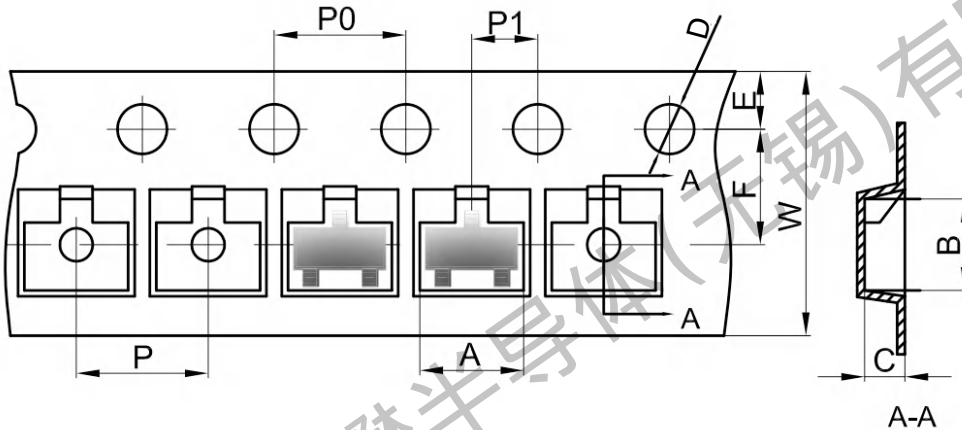
**N-Channel Enhancement Mosfet**

**SOT-23 Packing**

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



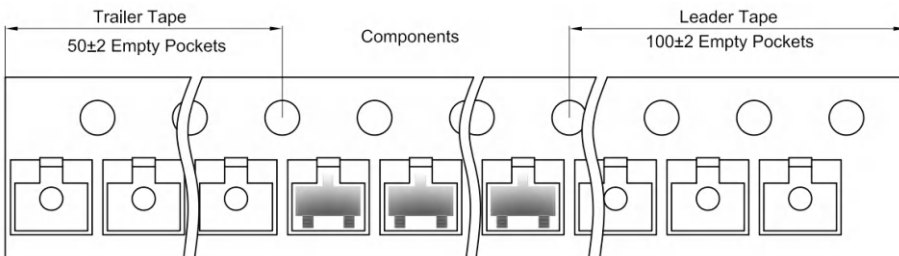
**SOT-23 Embossed Carrier Tape**



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
2023.05.09	23.05	Original	