
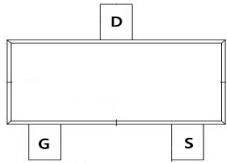


**TM03N06MI**

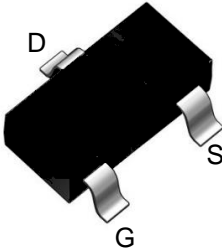
**N-Channel Enhancement Mosfet**

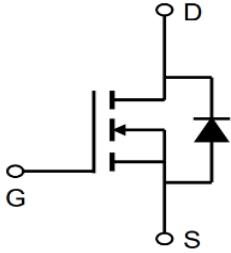
<p><b>General Description</b></p> <ul style="list-style-type: none"> <li>• Low <math>R_{DS(ON)}</math></li> <li>• RoHS and Halogen-Free Compliant</li> </ul> <p><b>Applications</b></p> <ul style="list-style-type: none"> <li>• Load switch</li> <li>• PWM</li> </ul>	<p><b>General Features</b></p> <p><math>V_{DS} = 60V</math>   <math>I_D = 3.0A</math></p> <p><math>R_{DS(ON)} = 75 m\Omega (Typ. .) @ V_{GS} = 10V</math></p> <p>100% UIS Tested 100% <math>R_g</math> Tested</p> 
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Marking: ARDP OR 2310D

MI: SOT-23-3L





**Absolute Maximum Ratings:** ( $T_a = 25^\circ C$  unless otherwise noted)

Symbol	Parameter	Ratings	Units
$V_{DS}$	Drain-Source Voltage	60	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current- $T_A = 25^\circ C$	3.0	A
	Continuous Drain Current- $T_A = 100^\circ C$	2.2	
$I_{DM}$	Pulse Drain Current Tested <sup>note1</sup>	14	A
$P_D$	Power Dissipation- $T_A = 25^\circ C$	1.7	W
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

**Thermal Characteristics:**

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	73.5	$^\circ C/W$

**Electrical Characteristics:** ( $T_C=25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	60	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=60V$	---	---	1	$\mu\text{A}$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	1	1.5	2.5	V
$R_{DS(on)}$	Drain-Source on-Resistance <sup>note2</sup>	$V_{GS}=10V, I_D=3A$	---	75	105	m $\Omega$
		$V_{GS}=4.5V, I_D=2A$	---	85	110	
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	---	325	---	pF
$C_{oss}$	Output Capacitance		---	85	---	
$C_{rss}$	Reverse Transfer Capacitance		---	15	---	
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=30V, V_{GS}=10V,$ $I_D=2A, R_{GEN}=3\ \Omega$	---	13	---	ns
$t_r$	Rise Time		---	51	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	19	---	ns
$t_f$	Fall Time		---	12	---	ns
$Q_g$	Total Gate Charge	$V_{GS}=10V, V_{DS}=30V,$ $I_D=3A$	---	5.1	---	nC
$Q_{gs}$	Gate-Source Charge		---	1.3	---	nC
$Q_{gd}$	Gate-Drain "Miller" Charge		---	1.7	---	nC
<b>Drain-Source Diode Characteristics</b>						
$I_S$	Continuous Source Current	---	---	---	3	A
$I_{SM}$	Pulsed Source Current	---	---	---	12	A
$V_{SD}$	Forward Voltage	$V_{GS}=0V, I_S=3A$	---	---	1.2	V

**Notes:**

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. Pulse Test: Pulse Width $\leq 300\mu\text{s}$ , Duty Cycle $\leq 0.5\%$

Typical Characteristics: ( $T_C=25^\circ\text{C}$  unless otherwise noted)

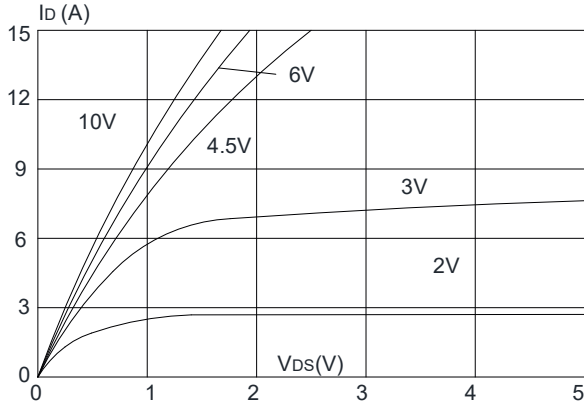


Figure1: Output Characteristics

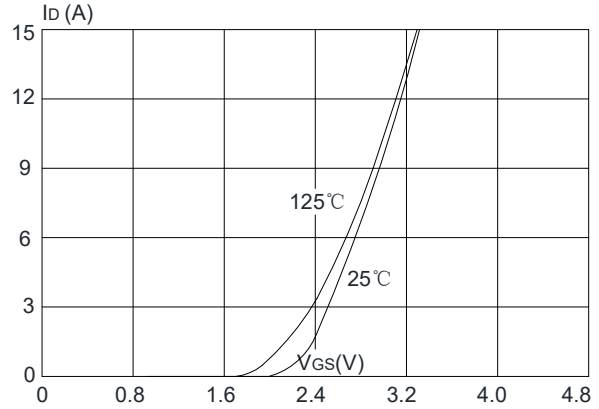


Figure 2: Typical Transfer Characteristics

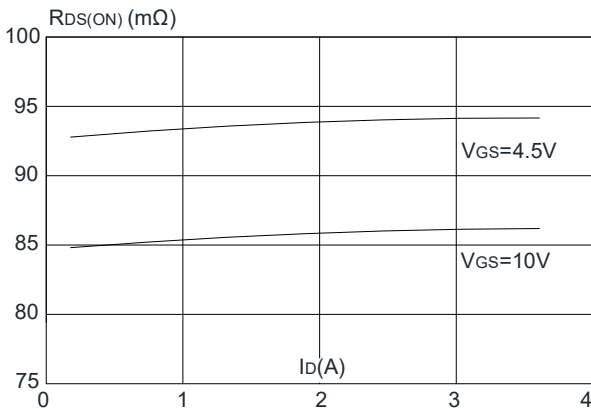


Figure 3: On-resistance vs. Drain Current

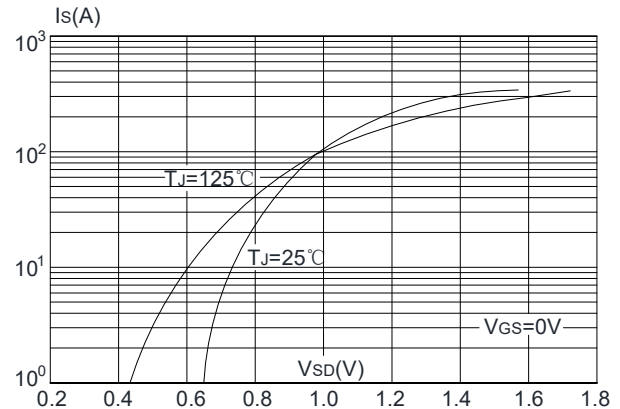


Figure 4: Body Diode Characteristics

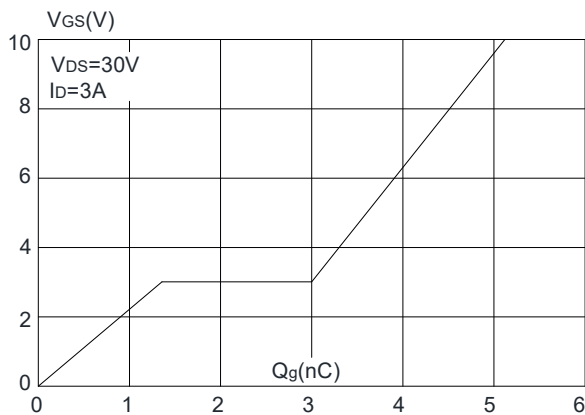


Figure 5: Gate Charge Characteristics

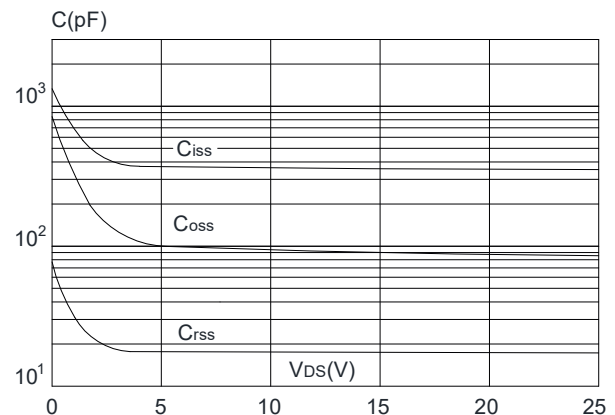


Figure 6: Capacitance Characteristics

TM03N06MI

N-Channel Enhancement Mosfet

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

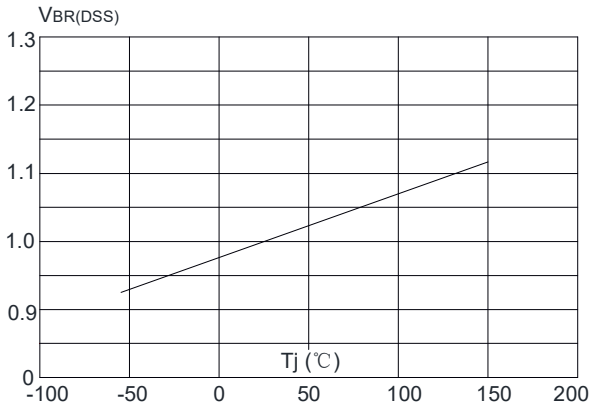


Figure 8: Normalized on Resistance vs. Junction Temperature

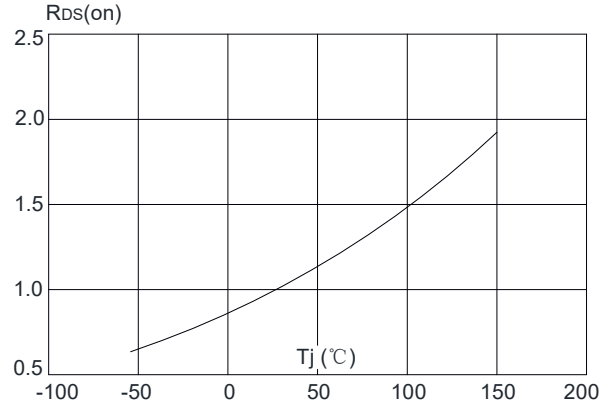


Figure 9: Maximum Safe Operating Area

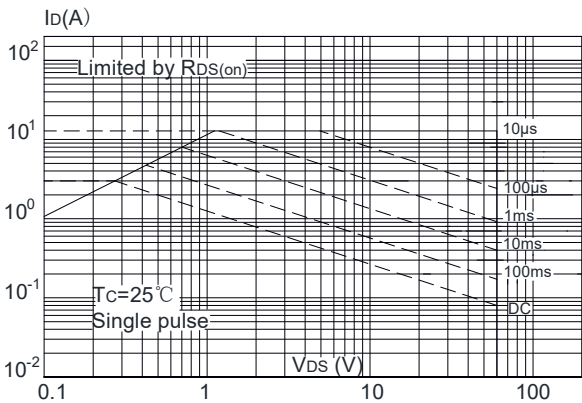


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

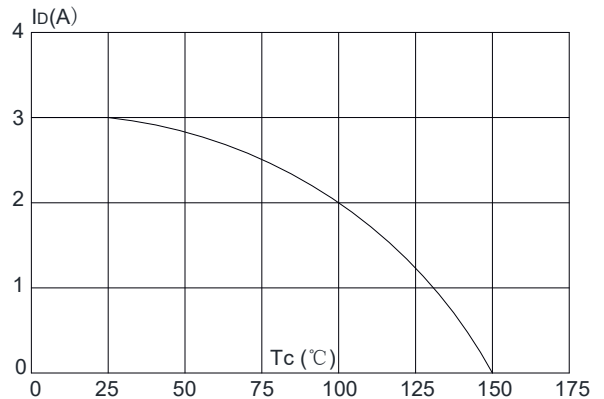
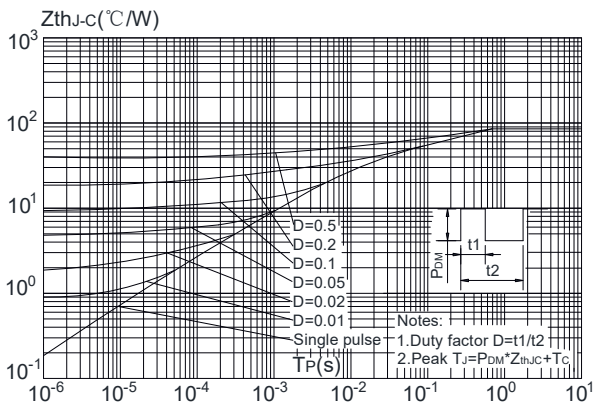
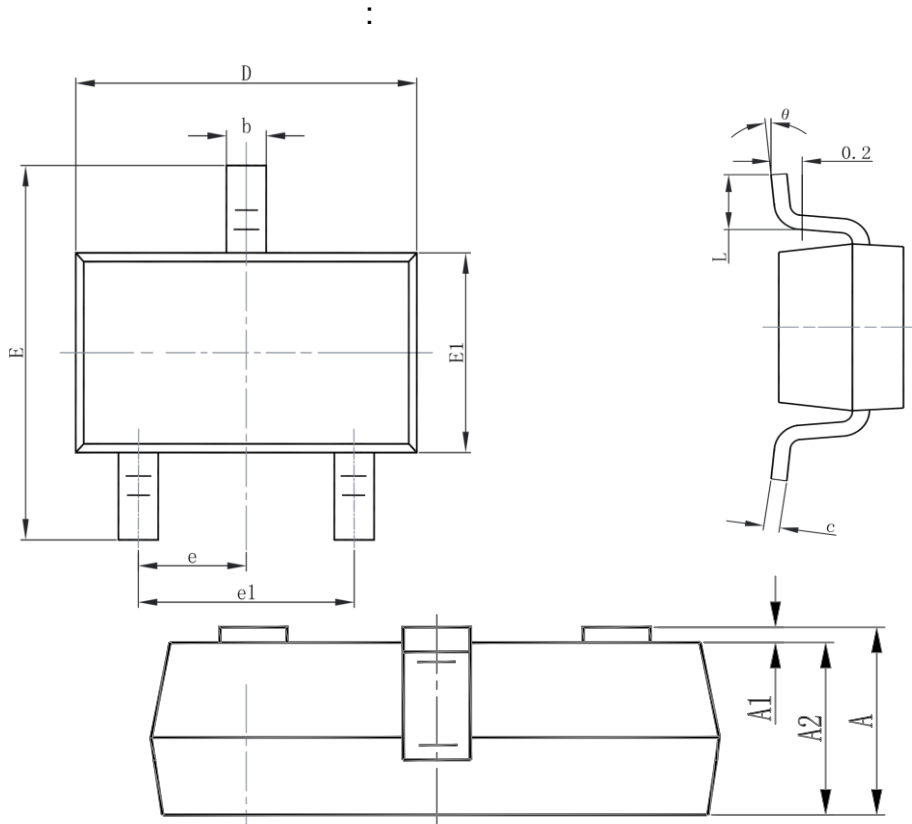


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



## Package Information:SOT-23-3L



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
E1	1.500	1.700	0.059	0.067
E	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
$\theta$	0°	8°	0°	8°