
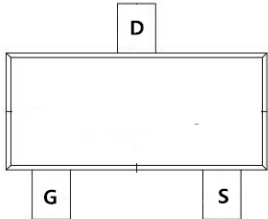


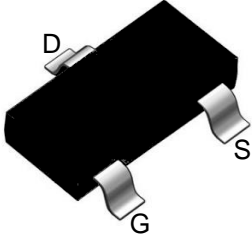
**TMP3006I**

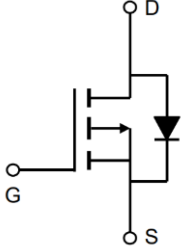
**P-Channel Enhancement Mosfet**

<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} = -30V</math> <math>I_D = -6.0A</math>  <math>R_{DS(ON)} = 26m\Omega(Typ.) @ V_{GS}=10V</math></p> <p>100% UIS Tested                  100% <math>R_g</math> Tested</p> 
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I: SOT-23





Marking: 30P06 OR 3006

**Absolute Maximum Ratings** ( $T_A=25^\circ C$  unless otherwise specified)

Symbol	Parameter	Max.	Units	
$V_{DSS}$	Drain-Source Voltage	-30	V	
$V_{GSS}$	Gate-Source Voltage	$\pm 20$	V	
$I_D$	Continuous Drain Current	$T_A = 25^\circ C$	-6	A
		$T_A = 100^\circ C$	-4.6	A
$I_{DM}$	Pulsed Drain Current <sup>note1</sup>	-18	A	
$P_D$	Power Dissipation $T_A = 25^\circ C$	1.5	W	
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	61.7	$^\circ C/W$	
$T_J, T_{STG}$	Operating and Storage Temperature Range	-55 to +150	$^\circ C$	

**Electrical Characteristics** ( $T_J=25^{\circ}\text{C}$  unless otherwise specified)

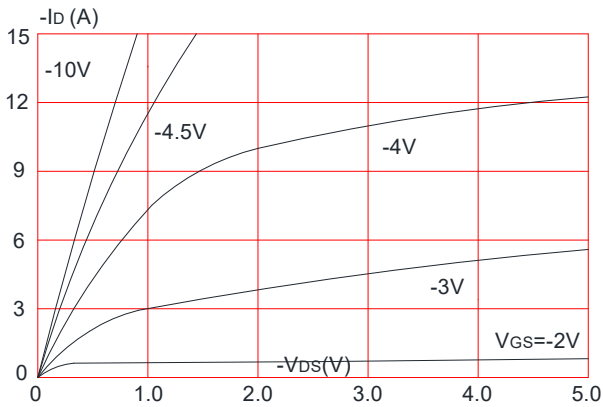
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-30	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=-30V, V_{GS}=0V,$	-	-	-1	$\mu A$
$I_{GSS}$	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.5	-2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance <small>note3</small>	$V_{GS}=-10V, I_D=-7A$	-	26	35	m $\Omega$
		$V_{GS}=-4.5V, I_D=-4A$	-	34	54	
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=-15V, V_{GS}=0V,$ $f=1.0MHz$	-	982	-	pF
$C_{oss}$	Output Capacitance		-	135	-	pF
$C_{rss}$	Reverse Transfer Capacitance		-	109	-	pF
$Q_g$	Total Gate Charge	$V_{DS}=-15V, I_D=-4A,$ $V_{GS}=-10V$	-	10	-	nC
$Q_{gs}$	Gate-Source Charge		-	2	-	nC
$Q_{gd}$	Gate-Drain("Miller") Charge		-	2.7	-	nC
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=-15V, I_D=-7A,$ $V_{GS}=-10V, R_{GEN}=2.5\Omega$	-	11	-	ns
$t_r$	Turn-on Rise Time		-	19	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	45	-	ns
$t_f$	Turn-off Fall Time		-	26	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
$I_S$	Maximum Continuous Drain to Source Diode Forward Current		-	-	-6	A
$I_{SM}$	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-28	A
$V_{SD}$	Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=-7A$	-	-0.8	-1.2	V

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

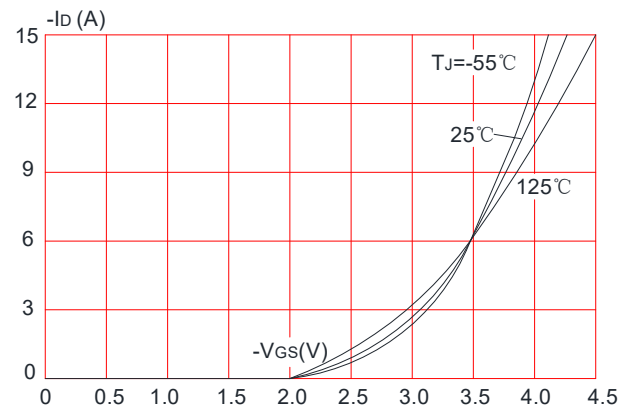
2. Pulse Test: Pulse Width $\leq 300\mu s$ , Duty Cycle $\leq 2\%$

## Typical Performance Characteristics

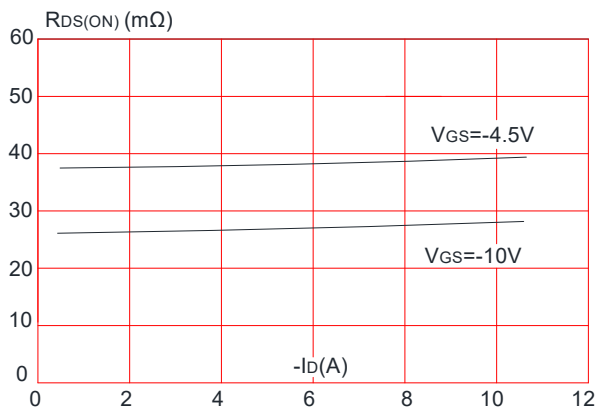
**Figure 1: Output Characteristics**



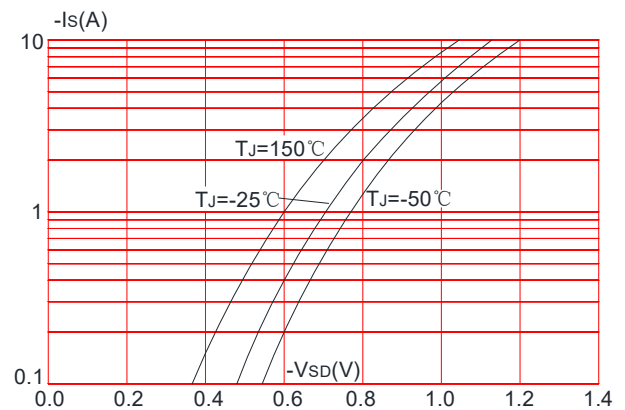
**Figure 2: Typical Transfer Characteristics**



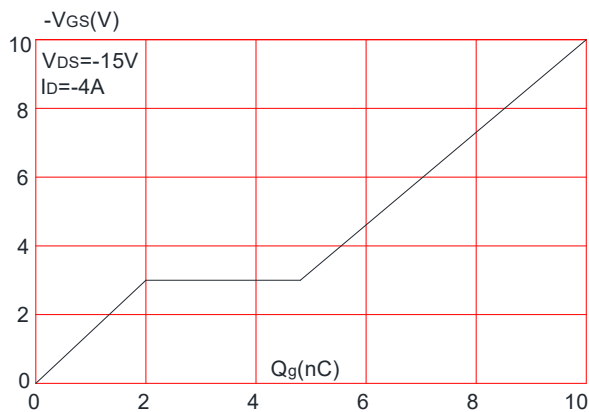
**Figure 3: On-resistance vs. Drain Current**



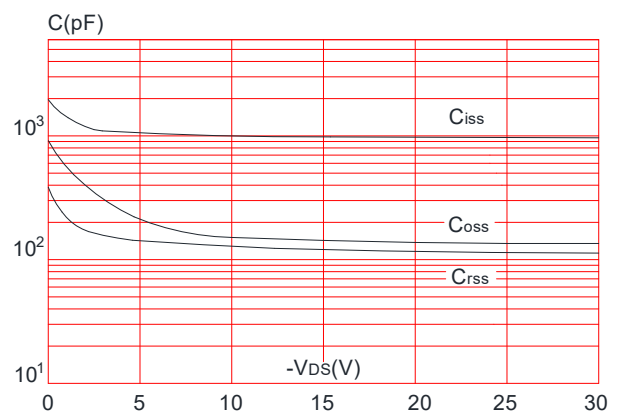
**Figure 4: Body Diode Characteristics**



**Figure 5: Gate Charge Characteristics**



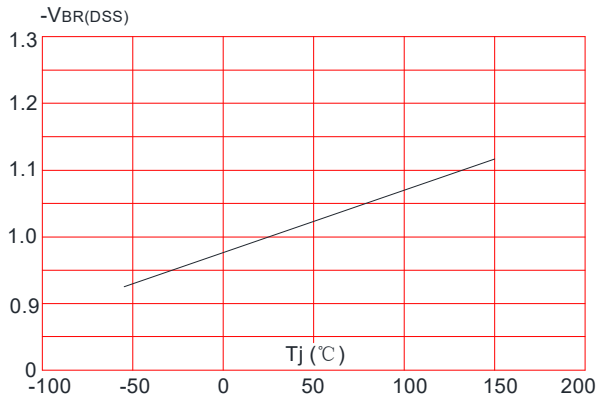
**Figure 6: Capacitance Characteristics**



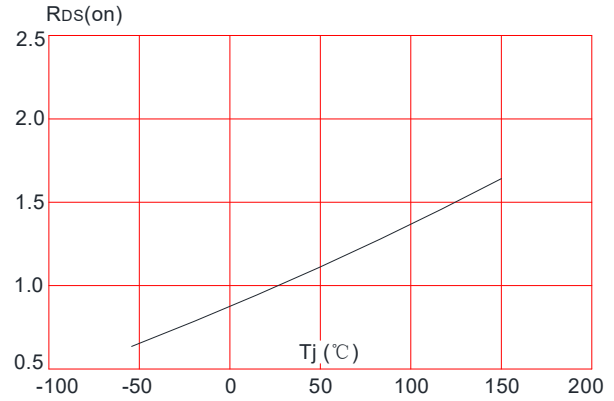
**TMP3006I**

**P-Channel Enhancement Mosfet**

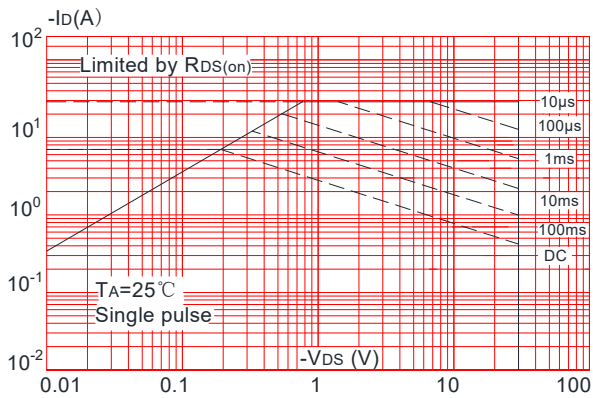
**Figure 7: Normalized Breakdown Voltage vs. Junction Temperature**



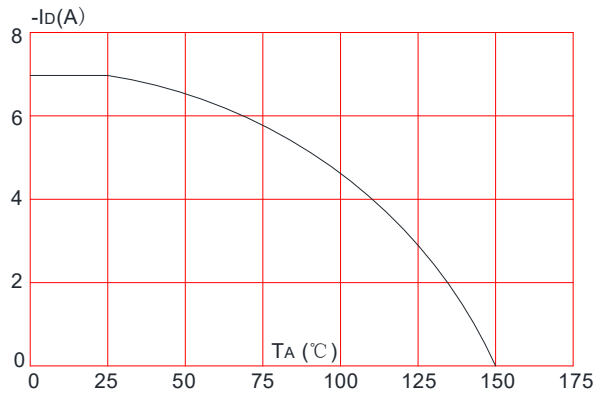
**Figure 8: Normalized on Resistance vs. Junction Temperature**



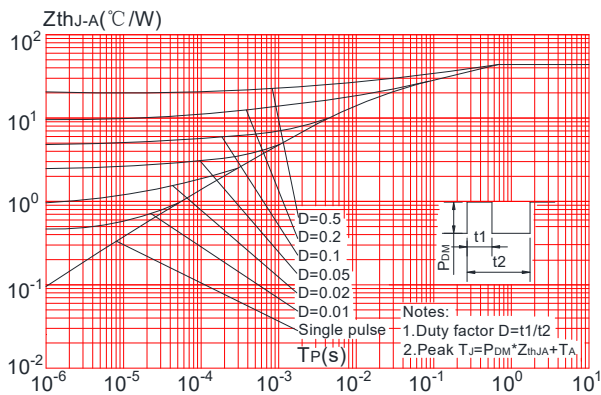
**Figure 9: Maximum Safe Operating Area**



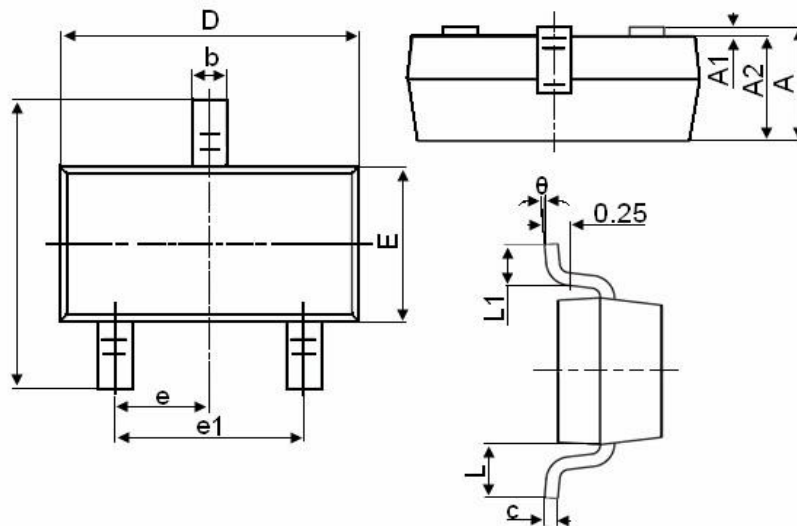
**Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature**



**Maximum Effective Transient Thermal Impedance, Junction-to-Ambient**



## 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
$\theta$	0°	8°