
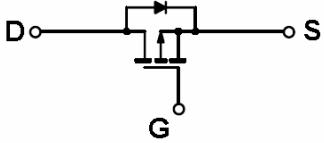


# RTM2301

## 20V P-Channel Enhancement Mode MOSFET

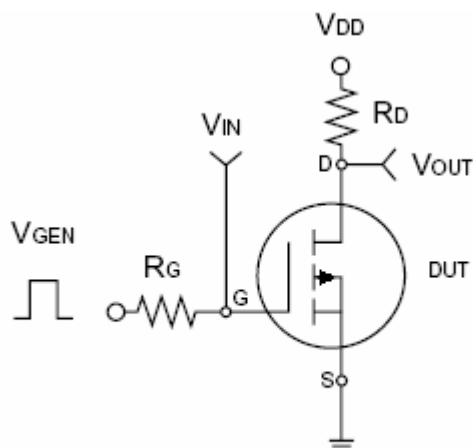
<p><b>SOT-23</b></p>  <p>Pin assignment: 1. Gate 2. Source 3. Drain</p>	<p><b>V<sub>DS</sub> = - 20V</b>  <b>R<sub>DS</sub> (on), V<sub>GS</sub> @ - 4.5V, I<sub>DS</sub> @ - 2.8A = 130mΩ</b>  <b>R<sub>DS</sub> (on), V<sub>GS</sub> @ - 2.5V, I<sub>DS</sub> @ - 2.0A = 190mΩ</b></p>								
<p><b>Features</b></p> <ul style="list-style-type: none"> <li>◇ Advanced trench process technology</li> <li>◇ High density cell design for ultra low on-resistance</li> </ul>	<ul style="list-style-type: none"> <li>◇ Excellent thermal and electrical capabilities</li> <li>◇ Compact and low profile SOT-23 package</li> </ul>								
<p><b>Block Diagram</b></p> 	<p><b>Ordering Information</b></p> <table border="1" data-bbox="849 996 1433 1086"> <thead> <tr> <th>Part No.</th> <th>Packing</th> <th>Package</th> </tr> </thead> <tbody> <tr> <td>RTM2301CX</td> <td>Tape &amp; Reel</td> <td>SOT-23</td> </tr> </tbody> </table>			Part No.	Packing	Package	RTM2301CX	Tape & Reel	SOT-23
Part No.	Packing	Package							
RTM2301CX	Tape & Reel	SOT-23							
<p><b>Absolute Maximum Rating</b> (Ta = 25°C unless otherwise noted)</p>									
<p><b>Parameter</b></p>	<p><b>Symbol</b></p>	<p><b>Limit</b></p>	<p><b>Unit</b></p>						
<p>Drain-Source Voltage</p>	<p>V<sub>DS</sub></p>	<p>- 20V</p>	<p>V</p>						
<p>Gate-Source Voltage</p>	<p>V<sub>GS</sub></p>	<p>± 8</p>	<p>V</p>						
<p>Continuous Drain Current</p>	<p>I<sub>D</sub></p>	<p>- 2.3</p>	<p>A</p>						
<p>Pulsed Drain Current</p>	<p>I<sub>DM</sub></p>	<p>- 10</p>	<p>A</p>						
<p>Maximum Power Dissipation</p>	<p>Ta = 25°C</p>	<p>1.25</p>	<p>W</p>						
	<p>Ta = 75°C</p>	<p>0.8</p>							
<p>Operating Junction Temperature</p>	<p>T<sub>J</sub></p>	<p>+150</p>	<p>°C</p>						
<p>Operating Junction and Storage Temperature Range</p>	<p>T<sub>J</sub>, T<sub>STG</sub></p>	<p>- 55 to +150</p>	<p>°C</p>						
<p><b>Thermal Performance</b></p>									
<p><b>Parameter</b></p>	<p><b>Symbol</b></p>	<p><b>Limit</b></p>	<p><b>Unit</b></p>						
<p>Lead Temperature (1/8" from case)</p>	<p>T<sub>L</sub></p>	<p>5</p>	<p>S</p>						
<p>Junction to Ambient Thermal Resistance (PCB mounted)</p>	<p>Rθja</p>	<p>100</p>	<p>°C/W</p>						

Note: Surface mounted on FR4 board t<=5sec.

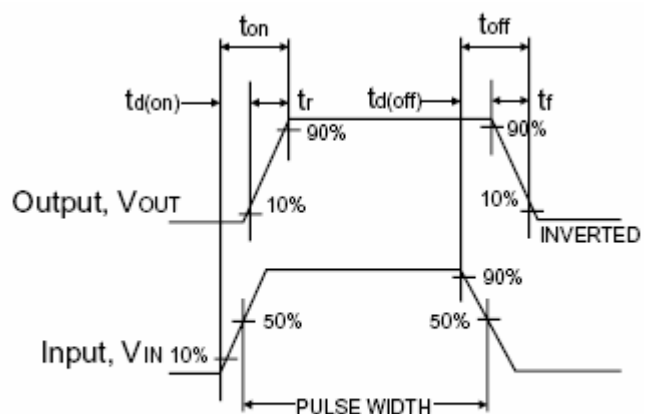
# RTM2301

Electrical Characteristics						
Ta = 25°C, unless otherwise noted						
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = -250\mu A$	$BV_{DSS}$	-20	--	--	V
Drain-Source On-State Resistance	$V_{GS} = -4.5V, I_D = -2.8A$	$R_{DS(ON)}$	--	95	130	mΩ
Drain-Source On-State Resistance	$V_{GS} = -2.5V, I_D = -2.0A$	$R_{DS(ON)}$	--	122	190	
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	$V_{GS(TH)}$	-0.45	--	--	V
Zero Gate Voltage Drain Current	$V_{DS} = -16V, V_{GS} = 0V$	$I_{DSS}$	--	--	-1.0	μA
Gate Body Leakage	$V_{GS} = \pm 8V, V_{DS} = 0V$	$I_{GSS}$	--	--	±100	nA
On-State Drain Current	$V_{DS} \geq -10V, V_{GS} = -5V$	$I_{D(ON)}$	-6	--	--	A
Forward Transconductance	$V_{DS} = -5V, I_D = -2.8A$	$g_{fs}$	--	6.5	--	S
<b>Dynamic</b>						
Total Gate Charge	$V_{DS} = -6V, I_D = -2.8A,$ $V_{GS} = -4.5V$	$Q_g$	--	5.4	10	nC
Gate-Source Charge		$Q_{gs}$	--	0.8	--	
Gate-Drain Charge		$Q_{gd}$	--	1.1	--	
Turn-On Delay Time	$V_{DD} = -6V, R_L = 6\Omega,$ $I_D = -1A, V_{GEN} = -4.5V,$ $R_G = 6\Omega$	$t_{d(on)}$	--	5	25	nS
Turn-On Rise Time		$t_r$	--	19	60	
Turn-Off Delay Time		$t_{d(off)}$	--	95	110	
Turn-Off Fall Time		$t_f$	--	65	80	
Input Capacitance	$V_{DS} = -6V, V_{GS} = 0V,$ $f = 1.0MHz$	$C_{iss}$	--	447	--	pF
Output Capacitance		$C_{oss}$	--	127	--	
Reverse Transfer Capacitance		$C_{rss}$	--	80	--	
<b>Source-Drain Diode</b>						
Max. Diode Forward Current		$I_S$	--	--	-1.6	A
Diode Forward Voltage	$I_S = -1.6A, V_{GS} = 0V$	$V_{SD}$	--	-0.8	-1.2	V

Note : pulse test: pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$



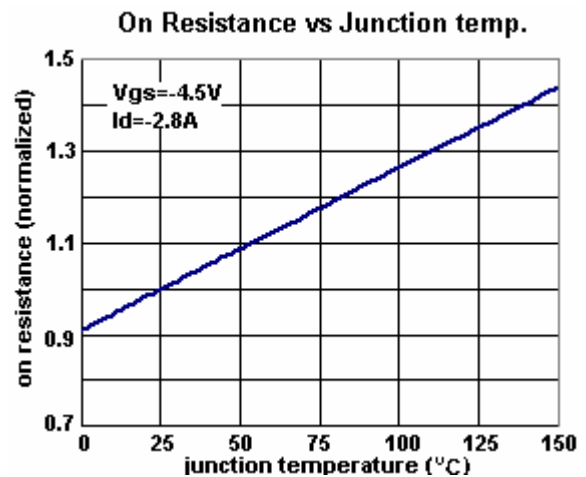
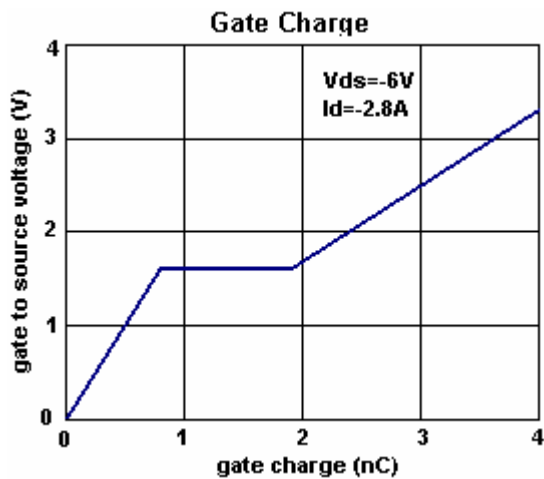
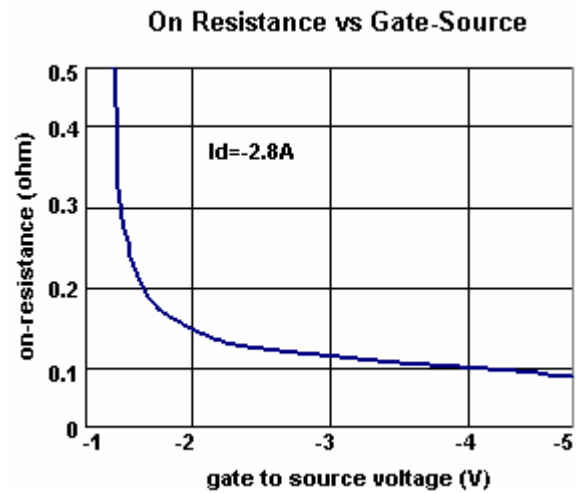
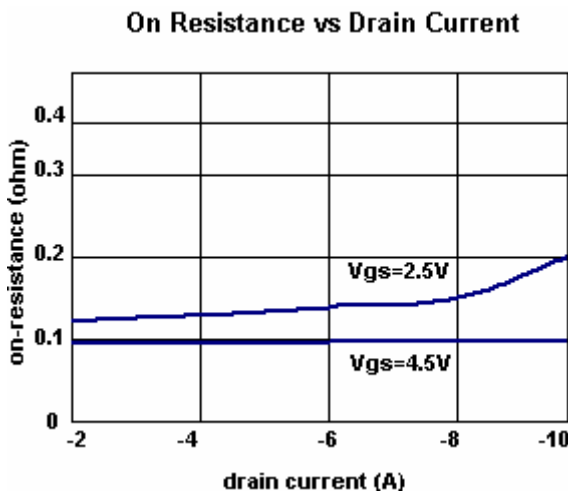
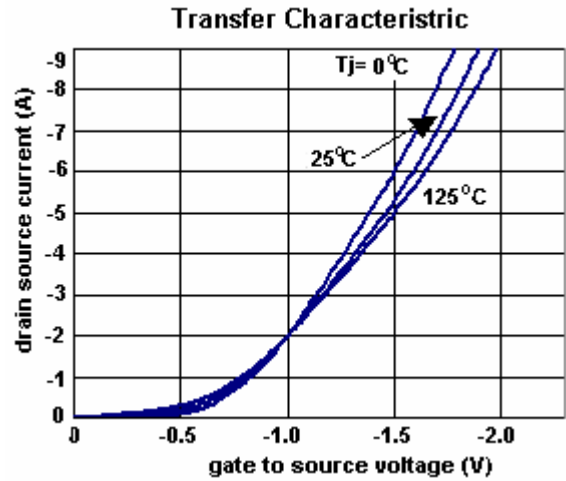
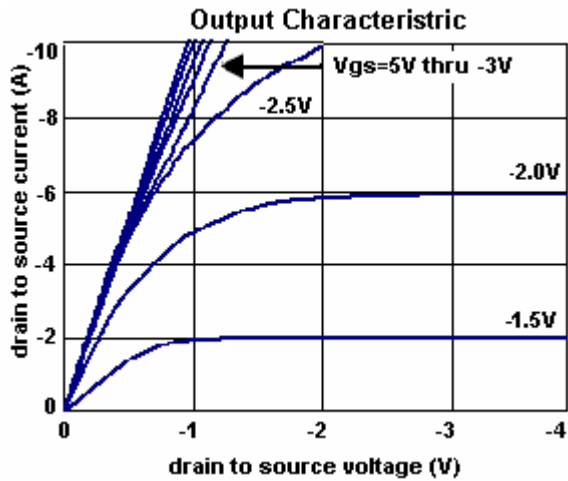
Switching Test Circuit



Switchin Waveforms

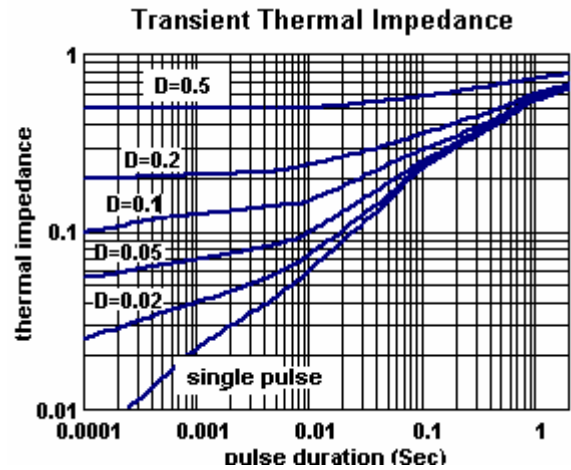
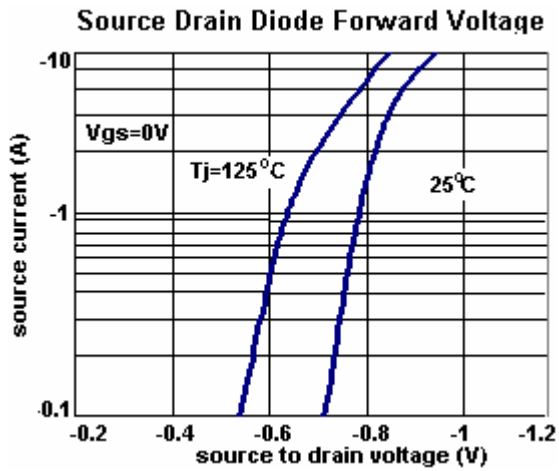
**RTM2301**

**Typical Characteristics Curve** ( $T_a = 25^\circ\text{C}$  unless otherwise noted)

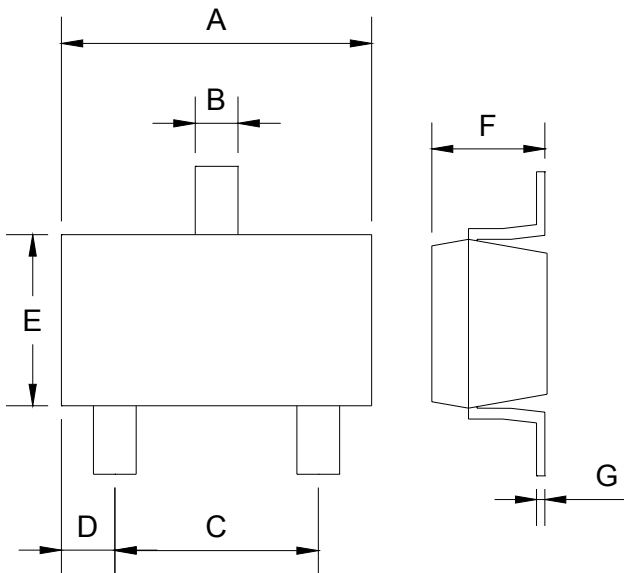


**RTM2301**

**Typical Characteristics Curve** ( $T_a = 25^\circ\text{C}$  unless otherwise noted)



SOT-23 Mechanical Drawing



SOT-23 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.88	2.91	0.113	0.115
B	0.39	0.42	0.015	0.017
C	1.78	2.03	0.070	0.080
D	0.51	0.61	0.020	0.024
E	1.59	1.66	0.063	0.065
F	1.04	1.08	0.041	0.043
G	0.07	0.09	0.003	0.004



Sirectifier Global Corp., Delaware, U.S.A.

U.S.A.: [sgc@sirectsemi.com](mailto:sgc@sirectsemi.com) France: [ss@sirectsemi.com](mailto:ss@sirectsemi.com) Taiwan: [se@sirectsemi.com](mailto:se@sirectsemi.com) Hong Kong: [hk@sirectsemi.com](mailto:hk@sirectsemi.com)  
 China: [st@sirectsemi.com](mailto:st@sirectsemi.com) Thailand: [th@sirectsemi.com](mailto:th@sirectsemi.com) Philippines: [aiac@sirectsemi.com](mailto:aiac@sirectsemi.com) Belize: [belize@sirectsemi.com](mailto:belize@sirectsemi.com)