

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Static (Note 3)						
Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = -250\mu A$	BV_{DSS}	-20	--	--	V
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	$V_{GS(TH)}$	-0.45	--	-0.95	V
Gate Body Leakage	$V_{GS} = \pm 8V, V_{DS} = 0V$	I_{GSS}	--	--	± 100	nA
Zero Gate Voltage Drain Current	$V_{DS} = -9.6V, V_{GS} = 0V$	I_{DSS}	--	--	-1.0	μA
On-State Drain Current	$V_{DS} \geq -10V, V_{GS} = -5V$	$I_{D(ON)}$	-6	--	--	A
Drain-Source On-State Resistance	$V_{GS} = -4.5V, I_D = -2.8A$	$R_{DS(ON)}$	--	80	100	m Ω
	$V_{GS} = -2.5V, I_D = -2.0A$		--	110	150	
	$V_{GS} = -1.8V, I_D = -2.0A$		--	150	190	
Forward Transconductance	$V_{DS} = -5V, I_D = -4A$	g_{fs}	--	6.5	--	S
Dynamic (Note 4)						
Total Gate Charge	$V_{DS} = -6V, I_D = -2.8A,$ $V_{GS} = -4.5V$	Q_g	--	5.8	--	nC
Gate-Source Charge		Q_{gs}	--	0.85	--	
Gate-Drain Charge		Q_{gd}	--	1.7	--	
Input Capacitance	$V_{DS} = -6V, V_{GS} = 0V,$ $f = 1.0\text{MHz}$	C_{iss}	--	415	--	pF
Output Capacitance		C_{oss}	--	223	--	
Reverse Transfer Capacitance		C_{rss}	--	87	--	
Switching (Note 5)						
Turn-On Delay Time	$V_{DS} = -6V, R_L = 6\Omega,$ $I_D = -1.7A, V_{GEN} = -4.5V,$ $R_G = 6\Omega$	$t_{d(on)}$	--	13	--	ns
Turn-On Rise Time		t_r	--	36	--	
Turn-Off Delay Time		$t_{d(off)}$	--	42	--	
Turn-Off Fall Time		t_f	--	34	--	
Source-Drain Diode (Note 3)						
Forward On Voltage	$I_S = -0.75A, V_{GS} = 0V$	V_{SD}	--	-0.8	-1.2	V

Notes:

1. Pulse width limited by the maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 5$ sec.
3. Pulse test: $PW \leq 300\mu s$, duty cycle $\leq 2\%$.
4. For DESIGN AID ONLY, not subject to production testing.
5. Switching time is essentially independent of operating temperature.

ORDERING INFORMATION

PART NO.	PACKAGE	PACKING
TSM2301BCX RFG	SOT-23	3,000pcs / 7"Reel

Note:

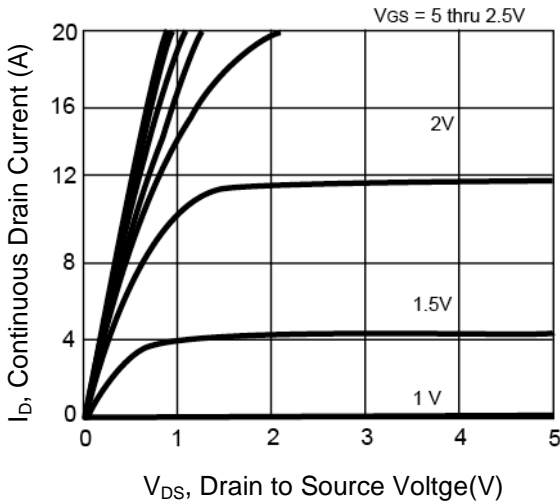
1. Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
2. Halogen-free according to IEC 61249-2-21 definition

Not Recommended

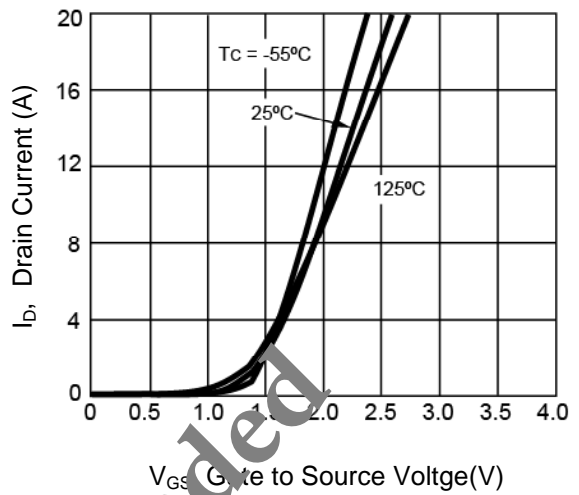
CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

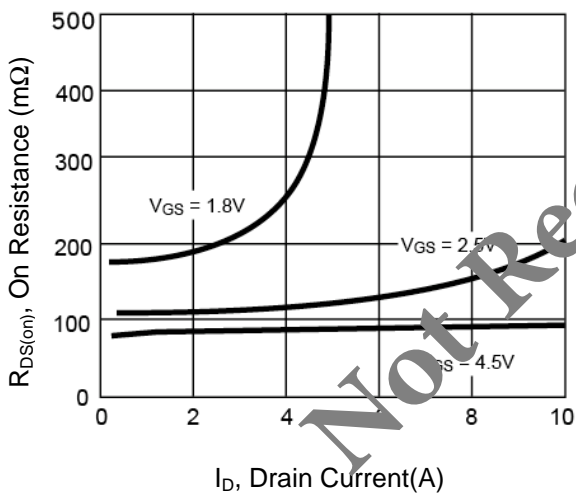
Output Characteristics



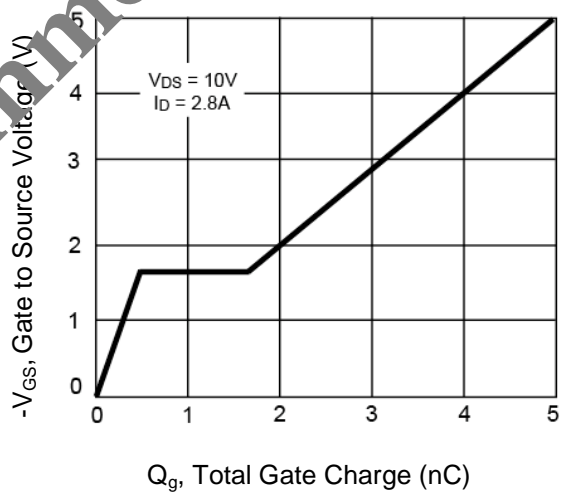
Transfer Characteristics



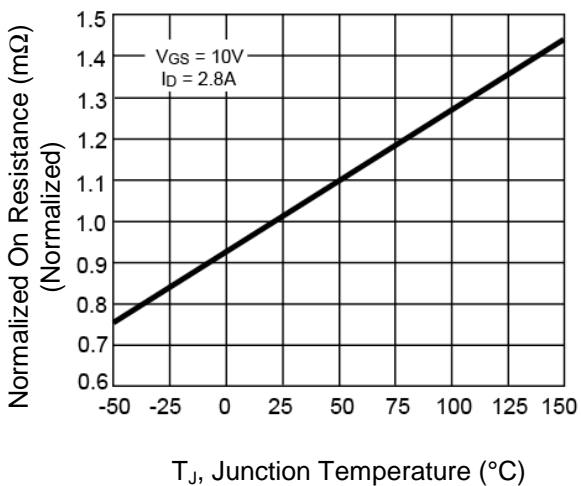
On-Resistance vs. Drain Current



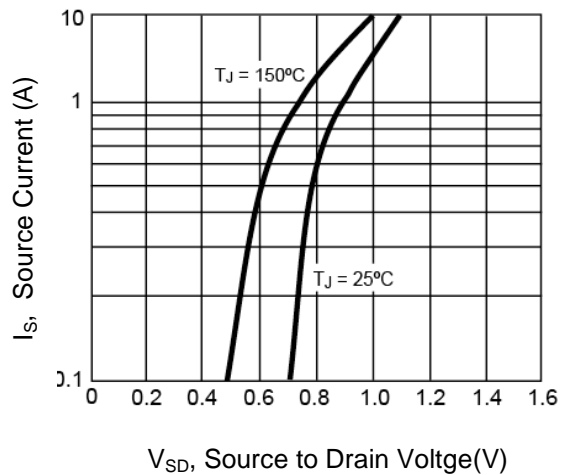
Gate Charge



On-Resistance vs. Junction Temperature



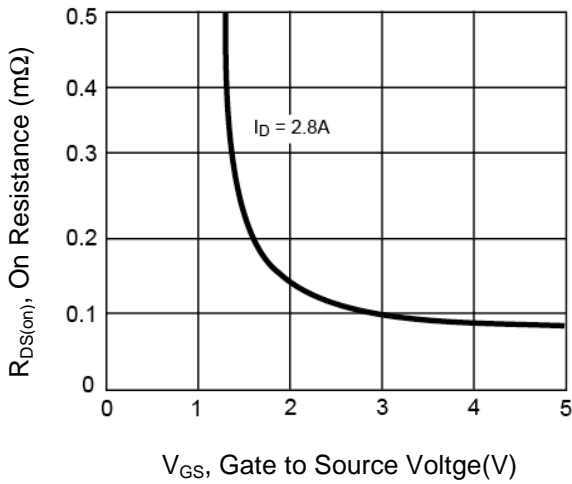
Source-Drain Diode Forward Voltage



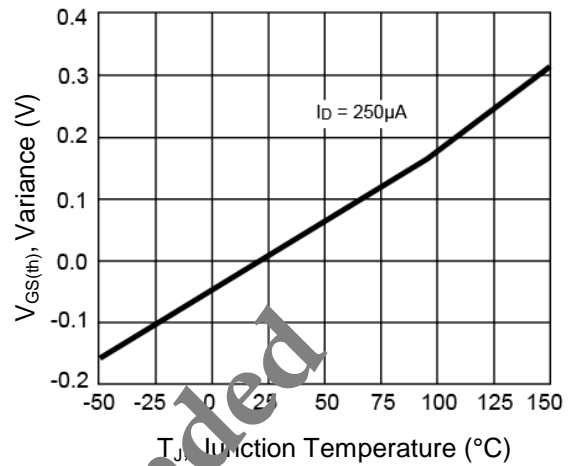
CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

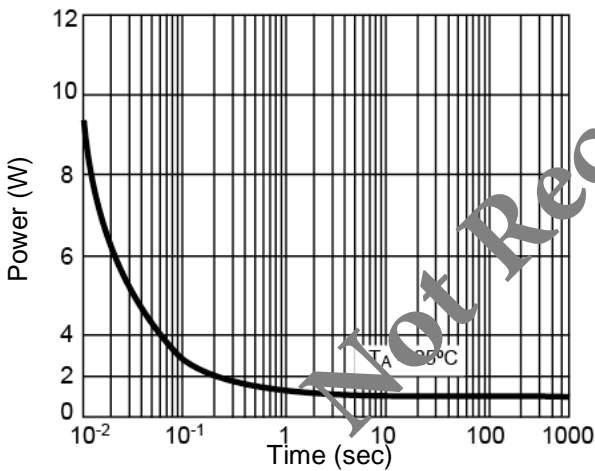
On-Resistance vs. Gate-Source Voltage



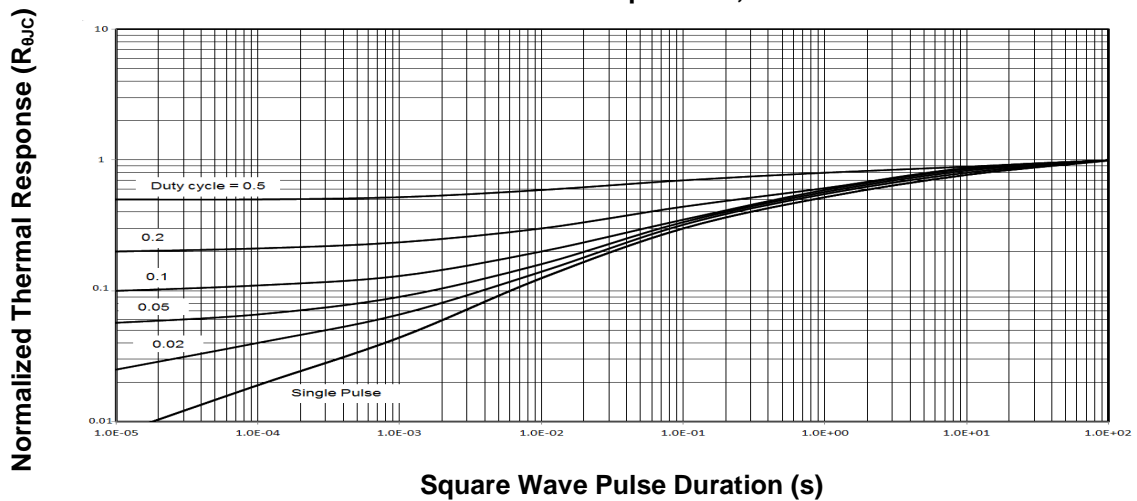
Threshold Voltage



Single Pulse Power

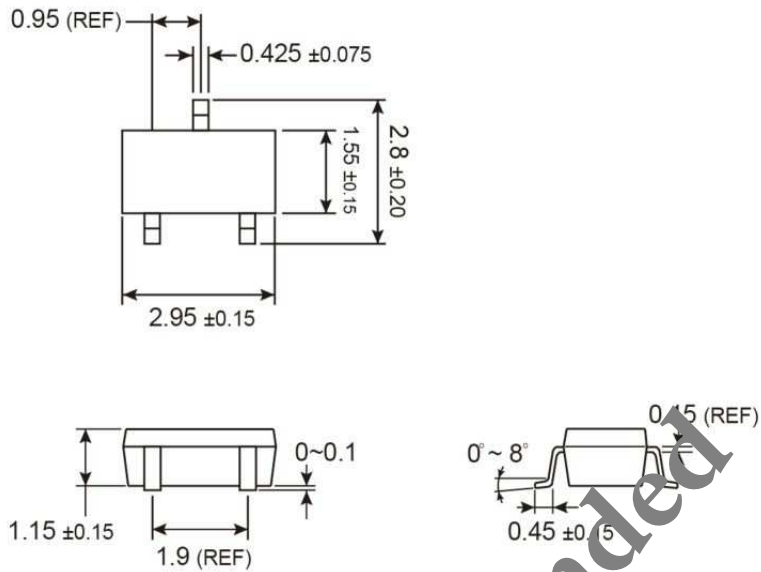


Normalized Thermal Transient Impedance, Junction-to-Ambient

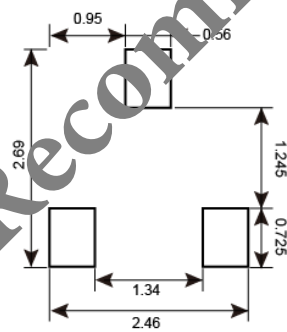


PACKAGE OUTLINE DIMENSIONS (Unit: Millimeters)

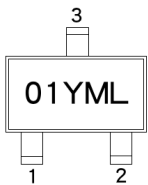
SOT-23



SUGGESTED PAD LAYOUT (Unit: Millimeters)



MARKING DIAGRAM



- 01** = Device Code
- Y** = Year Code
- M** = Month Code for Halogen Free Product
 - O** =Jan **P** =Feb **Q** =Mar **R** =Apr
 - S** =May **T** =Jun **U** =Jul **V** =Aug
 - W** =Sep **X** =Oct **Y** =Nov **Z** =Dec
- L** = Lot Code

Not Recommended

Notice

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Taiwan Semiconductor:](#)

[TSM2301BCX](#) [TSM2301BCX RFG](#)