



# THE DATASHEET OF TSM2328CX RFG





### SOT-23



#### Pin Definition:

1. Gate
2. Source
3. Drain

### Key Parameter Performance

Parameter	Value	Unit
$V_{DS}$	100	V
$R_{DS(on)}$ (max)	250	m $\Omega$
$Q_g$	11.1	nC

### Features

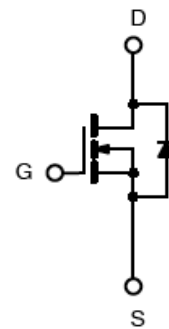
- Low  $R_{DS(ON)}$  250m $\Omega$  (Max.)
- Low gate charge typical @ 11.1nC (Typ.)
- High performance trench technology

### Ordering Information

Part No.	Package	Packing
TSM2328CX RFG	SOT-23	3Kpcs / 7" Reel

**Note:** "G" denotes for Halogen- and Antimony-free as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds

### Block Diagram



N-Channel MOSFET

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	1.5	A
Pulsed Drain Current <sup>(Note 1)</sup>	$I_{DM}$	6	A
Continuous Source Current (Diode Conduction)	$I_S$	0.6	A
Total Power Dissipation @ $T_A = 25^{\circ}\text{C}$	$P_D$	1.38	W
Operating Junction Temperature	$T_J$	150	$^{\circ}\text{C}$
Storage Temperature Range	$T_{STG}$	-55 to +150	$^{\circ}\text{C}$

### Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance - Junction to Foot	$R_{\theta_{JF}}$	55	$^{\circ}\text{C}/\text{W}$
Thermal Resistance - Junction to Ambient	$R_{\theta_{JA}}$	100	$^{\circ}\text{C}/\text{W}$

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

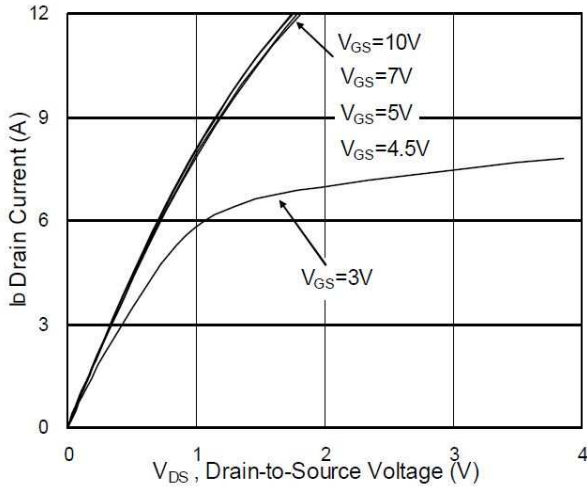
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	BV <sub>DSS</sub>	100	--	--	V
Drain-Source On-State Resistance	V <sub>GS</sub> = 10V, I <sub>D</sub> = 1.5A	R <sub>DS(ON)</sub>	--	--	250	mΩ
Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	V <sub>GS(TH)</sub>	1.0	--	2.5	V
Zero Gate Voltage Drain Current	V <sub>DS</sub> = 80V, V <sub>GS</sub> = 0V	I <sub>DSS</sub>	--	--	1	μA
Gate Body Leakage	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V	I <sub>GSS</sub>	--	--	±100	nA
On-State Drain Current	V <sub>DS</sub> = 5V, V <sub>GS</sub> = 10V	I <sub>D(ON)</sub>	6	--	--	A
Forward Transfer Conductance	V <sub>DS</sub> = 15V, I <sub>D</sub> = 1.5A	g <sub>fs</sub>	--	4	--	S
Diode Forward Voltage	I <sub>S</sub> = 1A, V <sub>GS</sub> = 0V	V <sub>SD</sub>	--	1.2	--	V
<b>Dynamic (Note 2)</b>						
Total Gate Charge	V <sub>DS</sub> = 80V, I <sub>D</sub> = 1.5A, V <sub>GS</sub> = 5V	Q <sub>g</sub>	--	11.1	--	nC
Gate-Source Charge		Q <sub>gs</sub>	--	4.4	--	
Gate-Drain Charge		Q <sub>gd</sub>	--	3	--	
Input Capacitance	V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0V, f = 1.0MHz	C <sub>iss</sub>	--	975	--	pF
Output Capacitance		C <sub>oss</sub>	--	38	--	
Reverse Transfer Capacitance		C <sub>rss</sub>	--	27	--	
<b>Switching (Note 3)</b>						
Turn-On Delay Time	V <sub>DD</sub> = 30V, I <sub>D</sub> = 1A, V <sub>GEN</sub> = 10V, R <sub>L</sub> = 30Ω, R <sub>G</sub> = 6Ω	t <sub>d(on)</sub>	--	9	--	ns
Turn-On Rise Time		t <sub>r</sub>	--	9.4	--	
Turn-Off Delay Time		t <sub>d(off)</sub>	--	26.8	--	
Turn-Off Fall Time		t <sub>f</sub>	--	2.6	--	

**Note:**

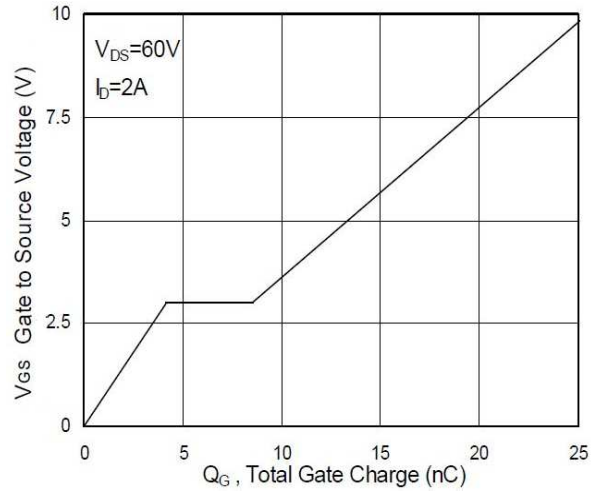
- Limited by maximum junction temperature.
- Pulse test: pulse width ≤300μs, duty cycle ≤2%.
- Guaranteed by design, not subject to production testing

**Electrical Characteristics Curve**

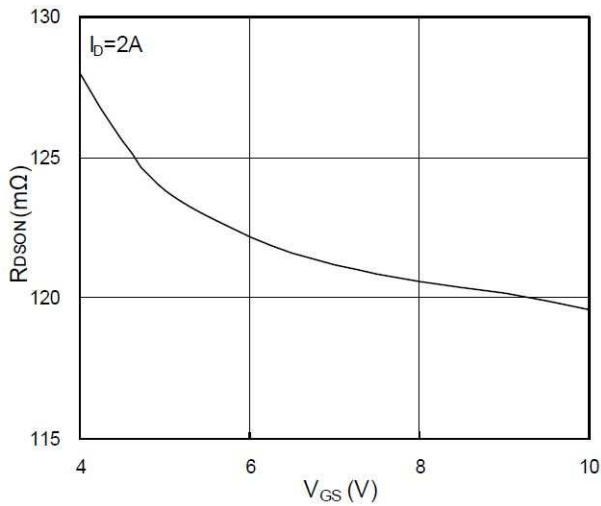
**Typical Output Characteristic**



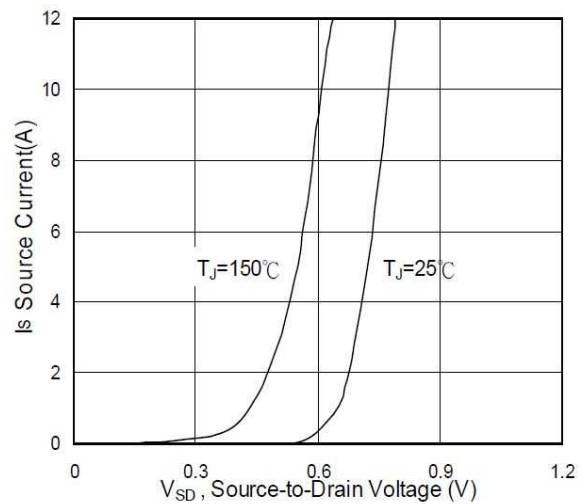
**Gate Charge**



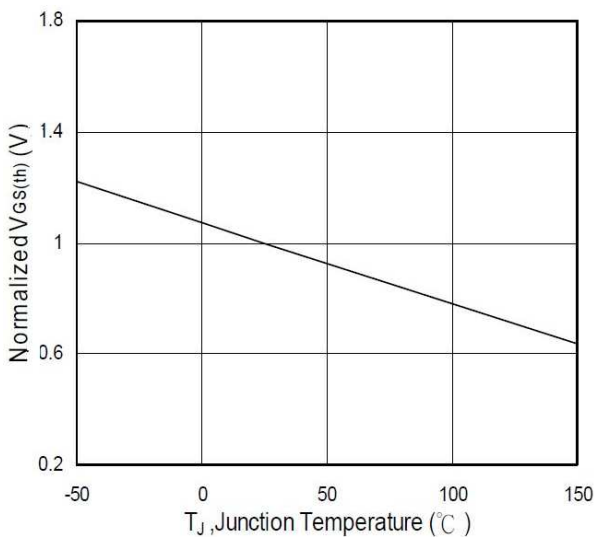
**On-Resistance vs. Gate-Source Voltage**



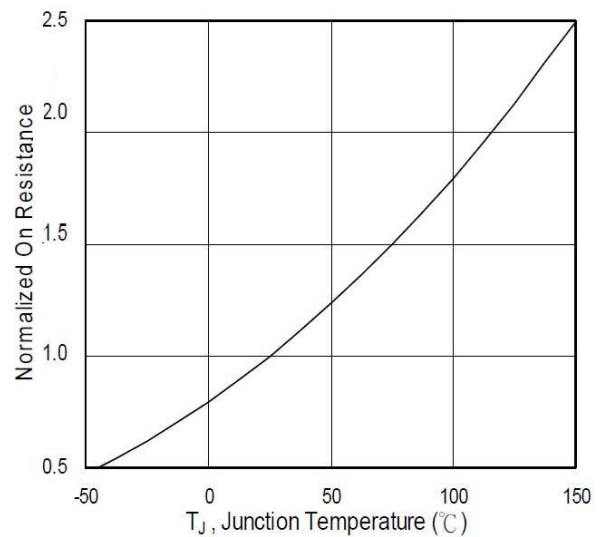
**Source-Drain Diode Forward Voltage**



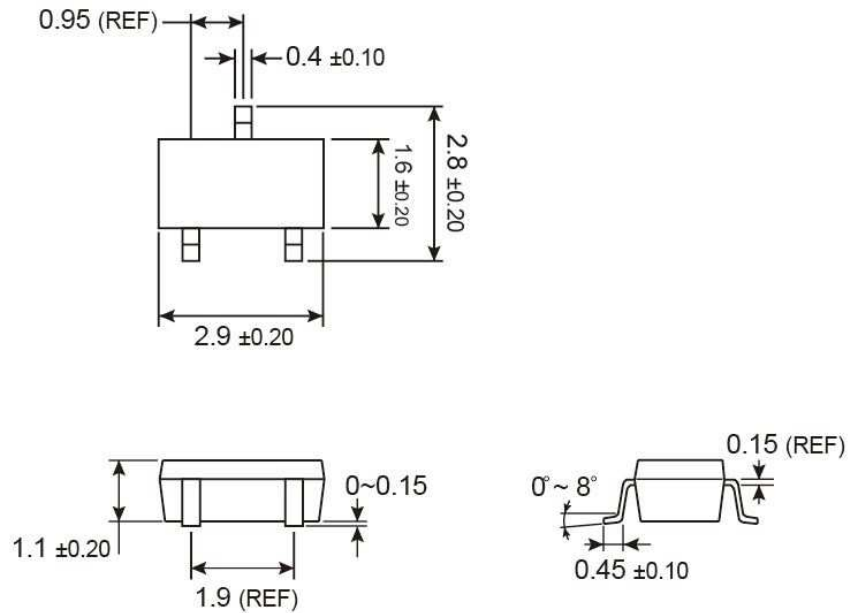
**Normalized  $V_{GS(th)}$  vs. Junction Temperature**



**Normalized  $R_{DS(on)}$  vs. Junction Temperature**

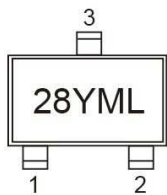


**SOT-23 Mechanical Drawing**



Unit: Millimeters

**Marking Diagram**



- 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

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