

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 Ω
Q_g	11.1	nC

Features

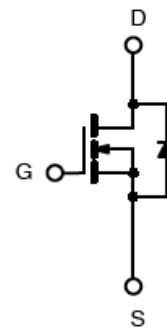
- Low $R_{DS(on)}$ 250m Ω (Max.)
- Low gate charge typical @ 11.1nC (Typ.)
- High performance trench technology

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}	± 20	V
Continuous Drain Current	I_D	1.5	A
Pulsed Drain Current (Note 1)	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	$^{\circ}\text{C/W}$
Thermal Resistance - Junction to Ambient	$R\theta_{JA}$	100	$^{\circ}\text{C/W}$

Electrical Specifications ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

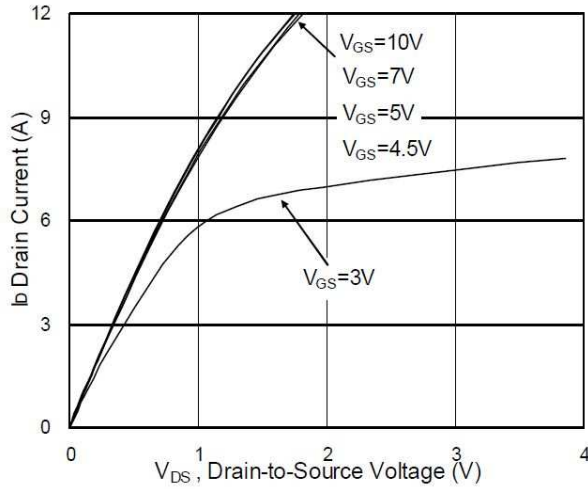
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	BV_{DSS}	100	--	--	V
Drain-Source On-State Resistance	$V_{GS} = 10V, I_D = 1.5A$	$R_{DS(ON)}$	--	--	250	mΩ
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	$V_{GS(TH)}$	1.0	--	2.5	V
Zero Gate Voltage Drain Current	$V_{DS} = 80V, V_{GS} = 0V$	I_{DSS}	--	--	1	μA
Gate Body Leakage	$V_{GS} = \pm 20V, V_{DS} = 0V$	I_{GSS}	--	--	±100	nA
On-State Drain Current	$V_{DS} = 5V, V_{GS} = 10V$	$I_{D(ON)}$	6	--	--	A
Forward Transfer Conductance	$V_{DS} = 15V, I_D = 1.5A$	g_{fs}	--	4	--	S
Diode Forward Voltage	$I_S = 1A, V_{GS} = 0V$	V_{SD}	--	1.2	--	V
Dynamic (Note 2)						
Total Gate Charge	$V_{DS} = 80V, I_D = 1.5A,$ $V_{GS} = 5V$	Q_g	--	11.1	--	nC
Gate-Source Charge		Q_{gs}	--	4.4	--	
Gate-Drain Charge		Q_{gd}	--	3	--	
Input Capacitance	$V_{DS} = 25V, V_{GS} = 0V,$ $f = 1.0MHz$	C_{iss}	--	975	--	pF
Output Capacitance		C_{oss}	--	38	--	
Reverse Transfer Capacitance		C_{rss}	--	27	--	
Switching (Note 3)						
Turn-On Delay Time	$V_{DD} = 30V, I_D = 1A,$ $V_{GEN} = 10V, R_L = 30\Omega,$ $R_G = 6\Omega$	$t_{d(on)}$	--	9	--	ns
Turn-On Rise Time		t_r	--	9.4	--	
Turn-Off Delay Time		$t_{d(off)}$	--	26.8	--	
Turn-Off Fall Time		t_f	--	2.6	--	

Note:

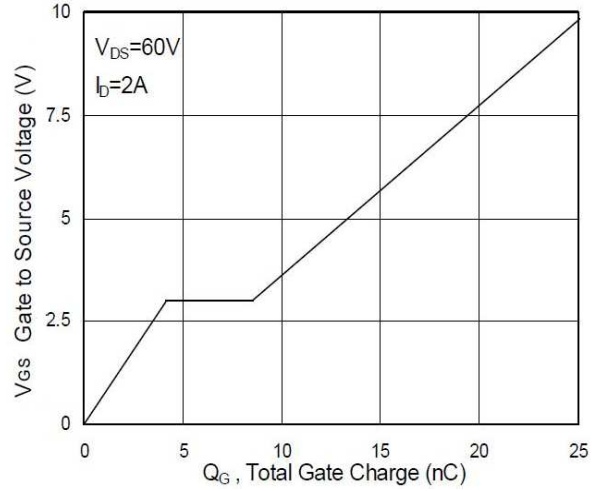
- Limited by maximum junction temperature.
- Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing

Electrical Characteristics Curve

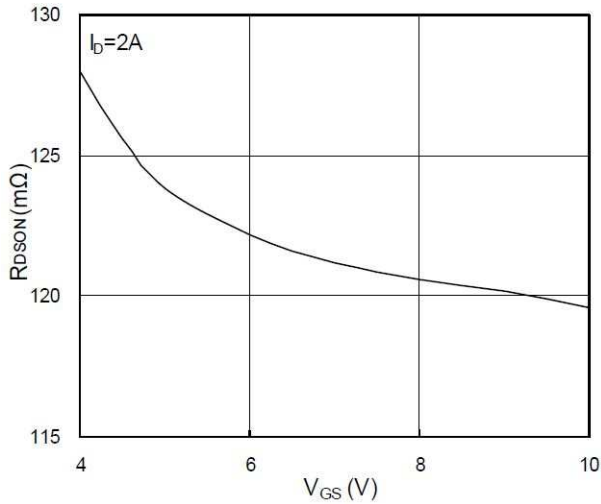
Typical Output Characteristic



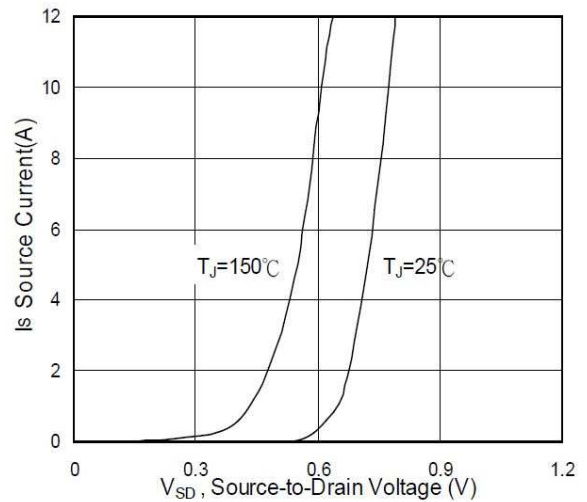
Gate Charge



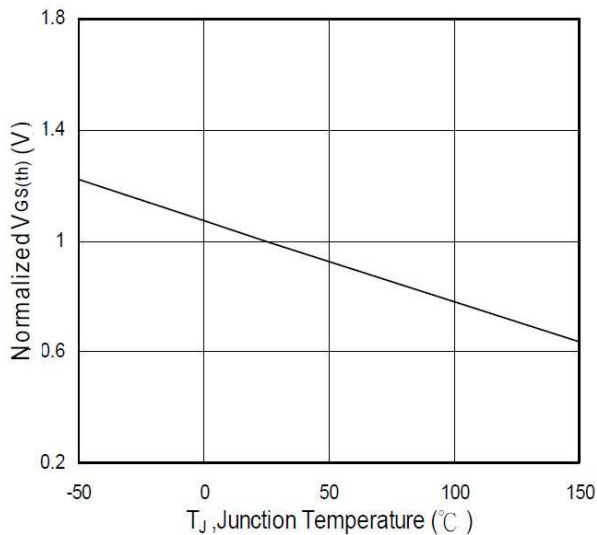
On-Resistance vs. Gate-Source Voltage



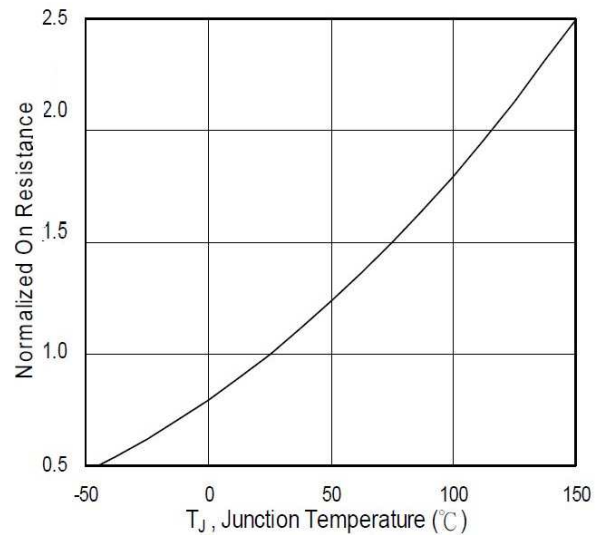
Source-Drain Diode Forward Voltage



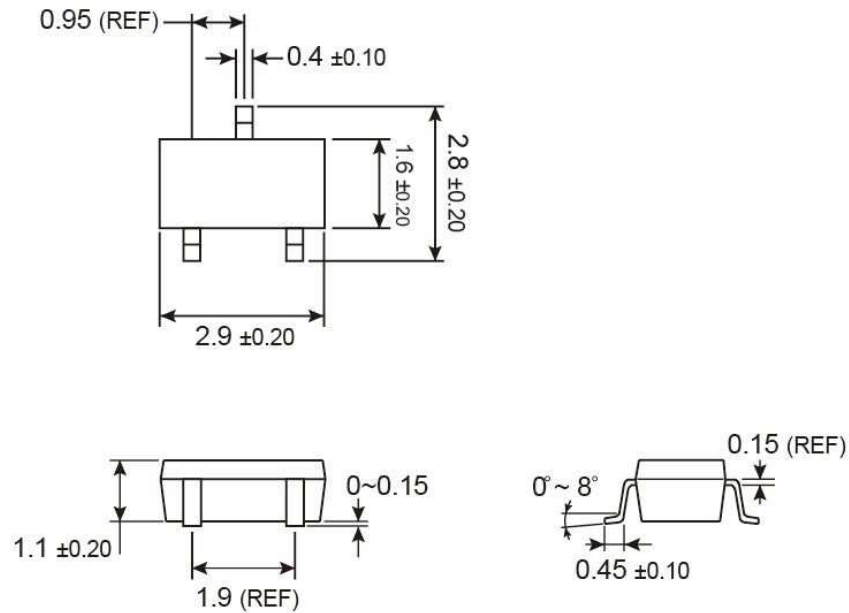
Normalized $V_{GS(th)}$ vs. Junction Temperature



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

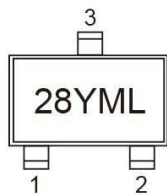


SOT-23 Mechanical Drawing



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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