

SOT-23



Pin Definition:

1. Gate
2. Source
3. Drain

PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$ (max)	I_D (mA)
60	2 @ $V_{GS} = 10V$	300
	4 @ $V_{GS} = 4.5V$	200

Features

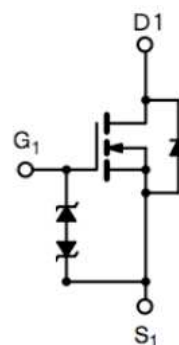
- Low On-Resistance
- ESD Protected 2KV
- High Speed Switching
- Low Voltage Drive

Ordering Information

Part No.	Package	Packing
TSM2N7002KCX RFG	SOT-23	3kpcs / 7" Reel

Note: "G" denotes for Halogen Free

Block Diagram



N-Channel MOSFET

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

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	V_{DS}	60	V	
Gate-Source Voltage	V_{GS}	± 20	V	
Drain Current	Continuous @ $T_A=25^\circ C$	I_D	300	mA
	Pulsed	I_{DM}	800	
Drain Reverse Current	Continuous @ $T_A=25^\circ C$	I_{DR}	300	mA
	Pulsed	I_{DMR}	800	
Maximum Power Dissipation	P_D	300	mW	
Operating Junction Temperature	T_J	+150	$^\circ C$	
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ C$	

Thermal Performance

Parameter	Symbol	Limit	Unit
Lead Temperature (1/8" from case)	T_L	5	S
Junction to Ambient Thermal Resistance (PCB mounted)	$R_{\theta JA}$	350	$^\circ C/W$

Notes:

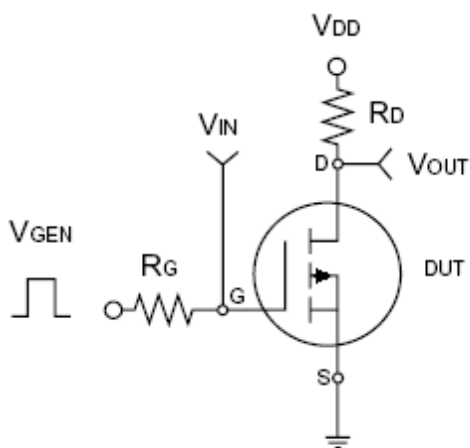
- a. Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
- b. When the device is mounted on a glass epoxy board with area measuring 1 x 0.75 x 0.62 inch.
- c. The power dissipation of the package may result in a continuous drain current.

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

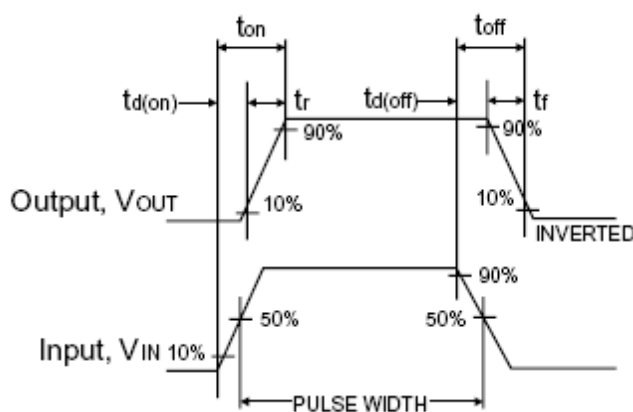
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$	BV_{DSS}	60	--	--	V
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	$V_{GS(TH)}$	1.0	1.5	2.5	V
Gate Body Leakage	$V_{GS}=\pm 20\text{V}, V_{DS}=0\text{V}$	I_{GSS}	--	--	± 10	μA
Zero Gate Voltage Drain Current	$V_{DS}=60\text{V}, V_{GS}=0\text{V}$	I_{DSS}	--	--	1.0	μA
Drain-Source On-State Resistance	$V_{GS}=10\text{V}, I_D=300\text{mA}$	$R_{DS(ON)}$	--	1.2	2	Ω
	$V_{GS}=4.5\text{V}, I_D=200\text{mA}$		--	2	4	
Forward Transconductance	$V_{DS}=10\text{V}, I_D=200\text{mA}$	g_{fs}	100	--	--	mS
Diode Forward Voltage	$I_S=300\text{mA}, V_{GS}=0\text{V}$	V_{SD}	--	0.8	1.4	V
Dynamic^b						
Total Gate Charge	$V_{DS}=10\text{V}, I_D=250\text{mA}, V_{GS}=4.5\text{V}$	Q_g	--	0.4	0.6	nC
Input Capacitance	$V_{DS}=25\text{V}, V_{GS}=0\text{V}, f=1.0\text{MHz}$	C_{iss}	--	30	--	μF
Output Capacitance		C_{oss}	--	6	--	
Reverse Transfer Capacitance		C_{rss}	--	2.5	--	
Switching^c						
Turn-On Delay Time	$V_{DD}=30\text{V}, R_G=10\Omega, I_D=200\text{mA}, V_{GEN}=10\text{V}$	$t_{d(on)}$	--	--	25	ns
Turn-Off Delay Time		$t_{d(off)}$	--	--	35	

Notes:

- a. pulse test: $PW \leq 300\mu\text{s}$, duty cycle $\leq 2\%$
- b. For DESIGN AID ONLY, not subject to production testing.
- c. Switching time is essentially independent of operating temperature.



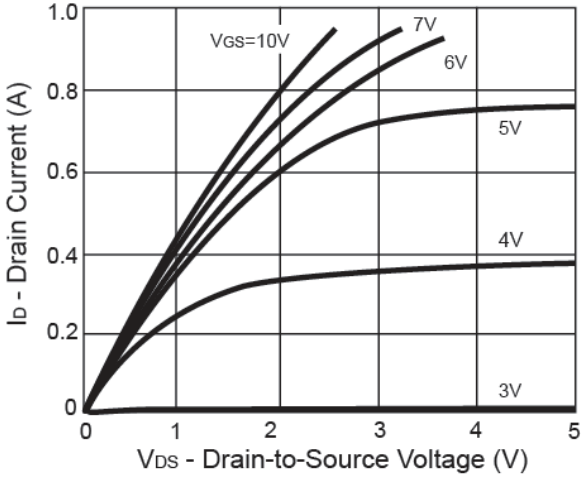
Switching Test Circuit



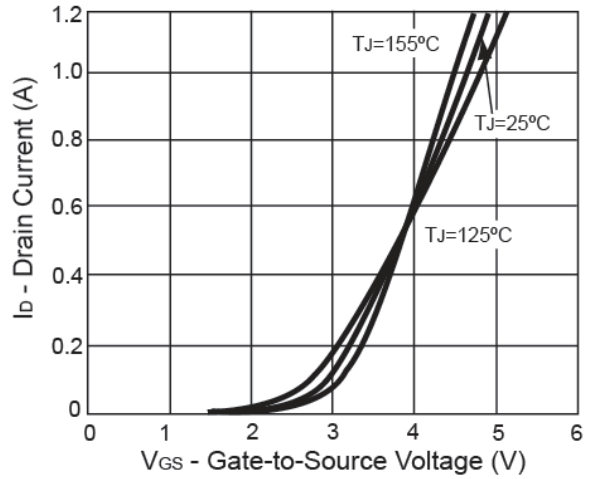
Switchin Waveforms

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

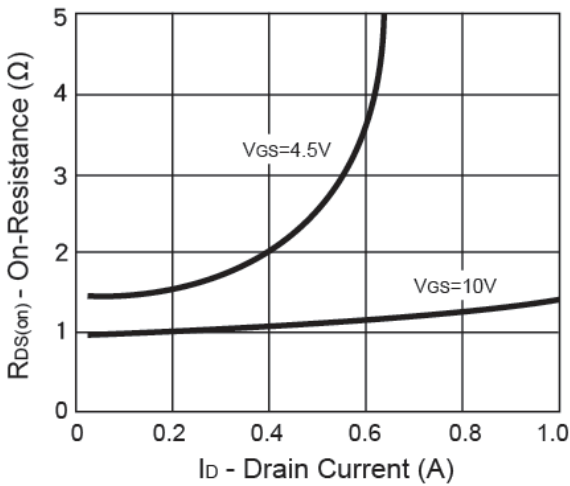
Output Characteristics



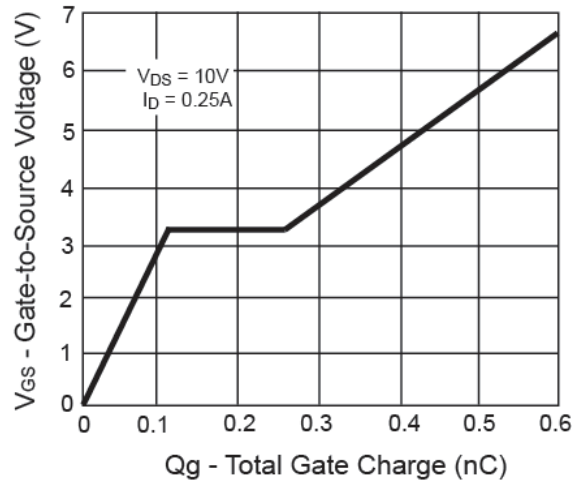
Transfer Characteristics



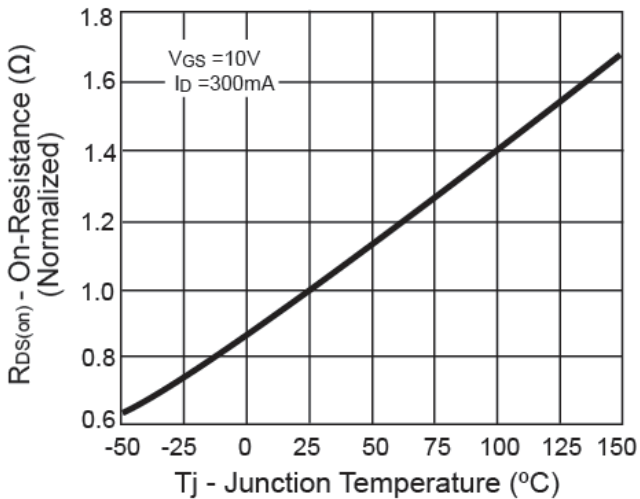
On-Resistance vs. Drain Current



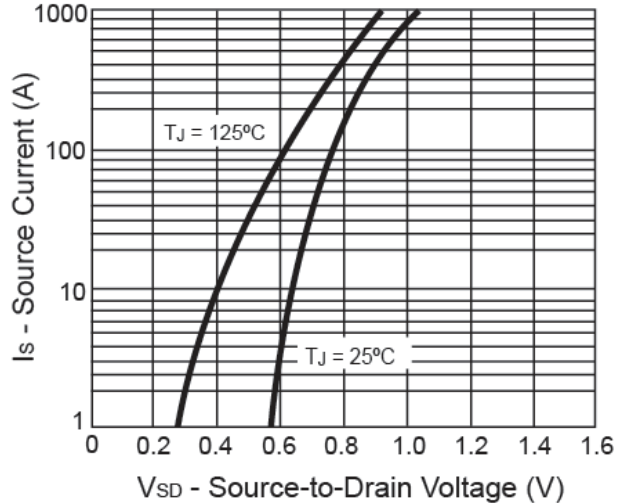
Gate Charge



On-Resistance vs. Junction Temperature

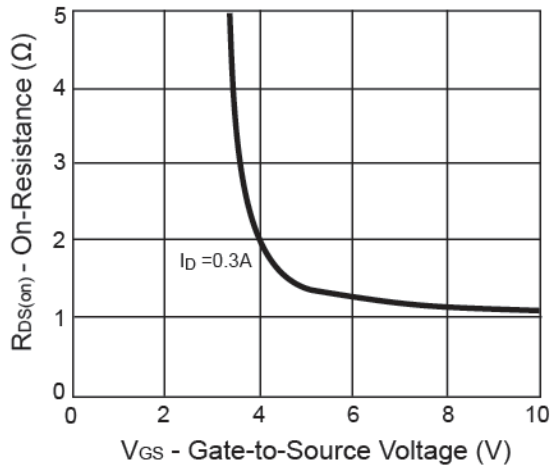


Source-Drain Diode Forward Voltage

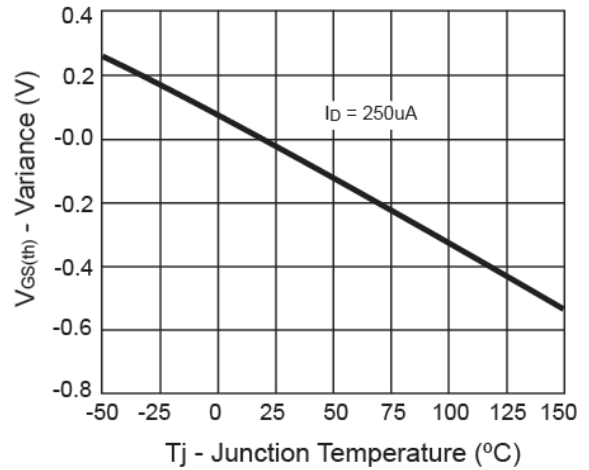


Electrical Characteristics Curve ($T_a = 25^\circ\text{C}$, unless otherwise noted)

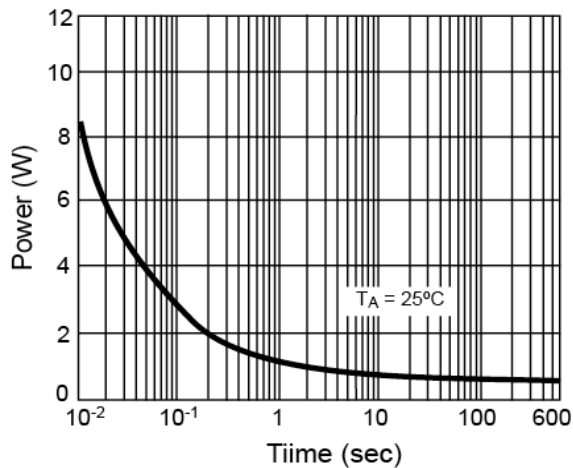
On-Resistance vs. Gate-Source Voltage



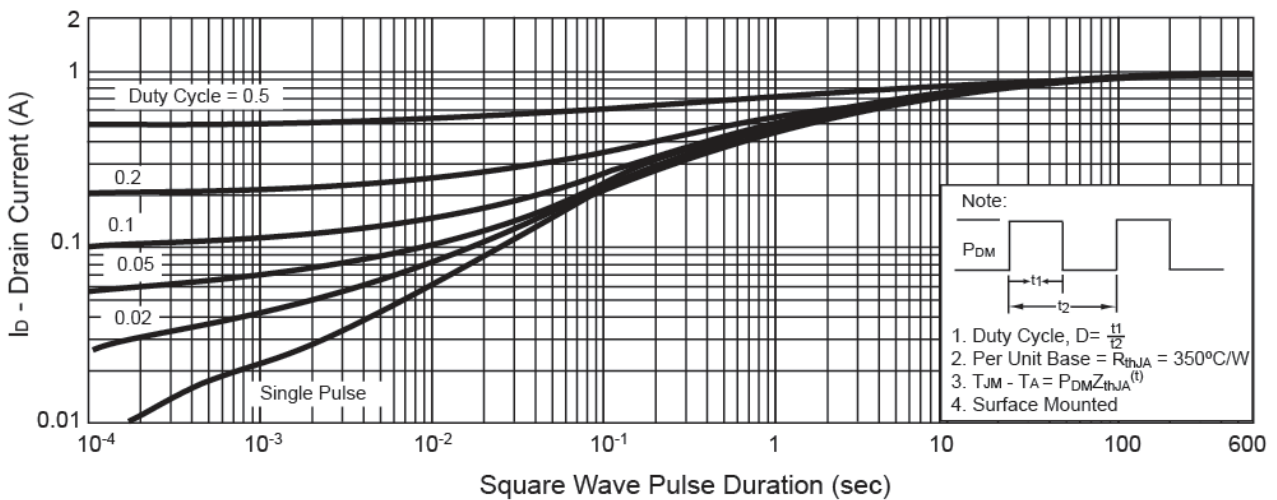
Threshold Voltage



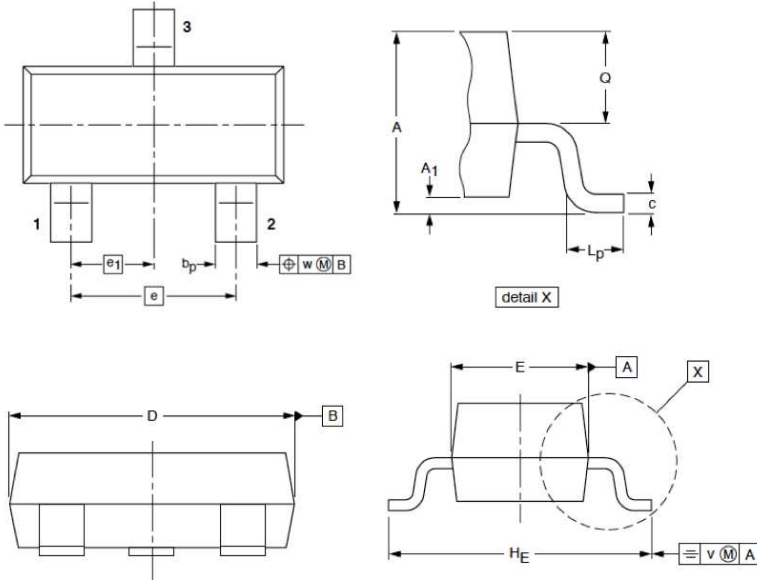
Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient

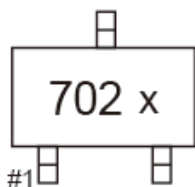


SOT-23 Mechanical Drawing



SOT-23 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX.
A	1.00 BSC		0.039 BSC	
A1	--	0.10	--	0.004
bp	0.37	0.42	0.014	0.016
C	0.09	0.15	0.004	0.005
D	2.80	3.00	0.110	0.118
E	1.20	1.40	0.047	0.055
e	1.9 BSC		0.075 BSC	
e1	0.95 BSC		0.037 BSC	
H _E	2.35	2.45	0.093	0.096
L _P	0.15	0.45	0.005	0.018
Q	0.45	0.55	0.018	0.022
V	0.2 BSC		0.007 BSC	
W	0.1 BSC		0.004 BSC	

Marking Diagram



702 = TSM2N7002KCX Device Code
x = Internal Code

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.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [MOSFET](#) category:

Click to view products by [Taiwan Semiconductor](#) manufacturer:

Other Similar products are found below :

[614233C](#) [648584F](#) [MCH3443-TL-E](#) [MCH6422-TL-E](#) [FDPF9N50NZ](#) [FW216A-TL-2W](#) [FW231A-TL-E](#) [APT5010JVR](#) [NTNS3A92PZT5G](#)
[IRF100S201](#) [JANTX2N5237](#) [2SK2464-TL-E](#) [2SK3818-DL-E](#) [FCA20N60_F109](#) [FDZ595PZ](#) [STD6600NT4G](#) [FSS804-TL-E](#) [2SJ277-DL-E](#)
[2SK1691-DL-E](#) [2SK2545\(Q,T\)](#) [D2294UK](#) [405094E](#) [423220D](#) [MCH6646-TL-E](#) [TPCC8103,L1Q\(CM](#) [367-8430-0972-503](#) [VN1206L](#)
[424134F](#) [026935X](#) [051075F](#) [SBVS138LT1G](#) [614234A](#) [715780A](#) [NTNS3166NZT5G](#) [751625C](#) [873612G](#) [IRF7380TRHR](#)
[IPS70R2K0CEAKMA1](#) [RJK60S3DPP-E0#T2](#) [RJK60S5DPK-M0#T0](#) [APT5010JVFR](#) [APT12031JFLL](#) [APT12040JVR](#) [DMN3404LQ-7](#)
[NTE6400](#) [JANTX2N6796U](#) [JANTX2N6784U](#) [JANTXV2N5416U4](#) [SQM110N05-06L-GE3](#) [SIHF35N60E-GE3](#)