TAIWAN SEMICONDUCTOR

RoHS COMPLIANCE

TSM2N7000

60V N-Channel MOSFET

SOT-92

Pin Definition:
1. Gate
2. Source
3. Drain

PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$(Ω)	I_D (mA)
60	5 @ V_{GS} = 10V	500

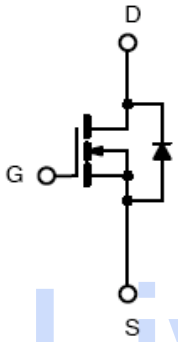
Features

- Fast Switching Speed
- Low Input and Output Leakage

Application

- Direct Logic-Level Interface: TTL/CMOS
- Solid-State Relays

Block Diagram



N-Channel MOSFET

Ordering Information

Part No.	Package	Packing
TSM2N7000CT B0	TO-92	1Kpcs / Bulk
TSM2N7000CT A3	TO-92	2Kpcs / Ammo

Absolute Maximum Rating (Ta = 25°C unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current		I_D	200	mA
Pulsed Drain Current		I_{DM}	500	mA
Continuous Source Current (Diode Conduction)[a,b]		I_S	500	mA
Maximum Power Dissipation	Ta = 25°C	P_D	350	mW
	Ta = 75°C		280	
Operating Junction Temperature		T_J	+150	°C
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Thermal Performance

Parameter	Symbol	Limit	Unit
Lead Temperature (1/8" from case)	T_L	10	S
Junction to Ambient Thermal Resistance (PCB mounted)	$R\Theta_{JA}$	357	°C/W

Notes:

a. Pulse width limited by the Maximum junction temperature

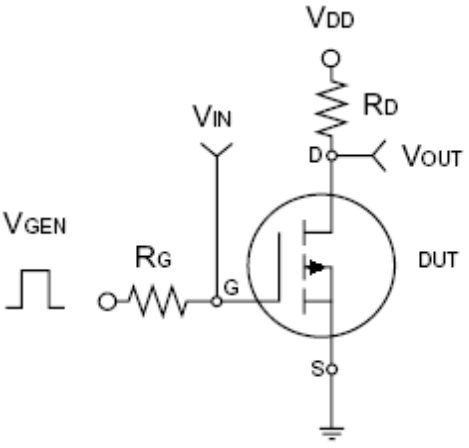
b. Surface Mounted on FR4 Board, t ≤ 5 sec.

TSM2N7000
60V N-Channel MOSFET

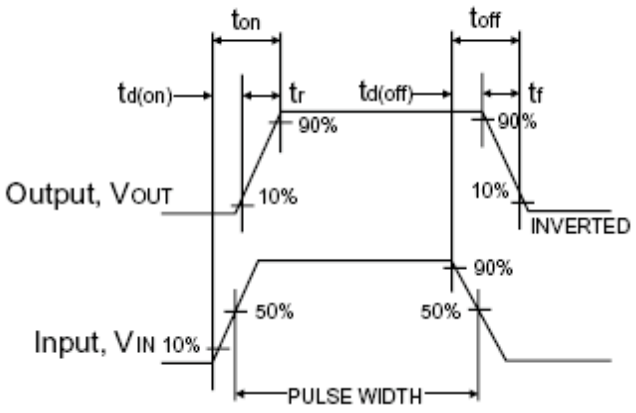
Electrical Specifications (Ta = 25°C, unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 10μA	BV_{DSS}	60	--	--	V
Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 1mA	$V_{GS(TH)}$	0.8	--	3.0	V
Gate Body Leakage	V_{GS} = ±15V, V_{DS} = 0V	I_{GSS}	--	--	±10	nA
Zero Gate Voltage Drain Current	V_{DS} = 48V, V_{GS} = 0V	I_{DSS}	--	--	1.0	μA
Drain-Source On-State Resistance	V_{GS} = 10V, I_D = 500mA	$R_{DS(ON)}$	--	--	5.0	Ω
	V_{GS} = 5V, I_D = 50mA		--	7.5	--	
Forward Transconductance	V_{DS} = 15V, I_D = 300mA	g_{fs}	--	320	--	mS
Diode Forward Voltage	I_S = 200mA, V_{GS} = 0V	V_{SD}	--	1.3	1.5	V
Dynamic[b]						
Input Capacitance	V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz	C_{iss}	--	60	--	pF
Output Capacitance		C_{oss}	--	25	--	
Reverse Transfer Capacitance		C_{rss}	--	5	--	
Switching[c]						
Turn-On Rise Time	V_{DD} = 15V, R_L = 30Ω, I_D = 500mA, V_{GEN} = 10V, R_G = 25Ω	t_r	--	10	--	nS
Turn-Off Fall Time		t_f	--	10	--	

Notes:
a. pulse test: PW ≤300μS, duty cycle ≤2%
b. For DESIGN AID ONLY, not subject to production testing.
b. Switching time is essentially independent of operating temperature.

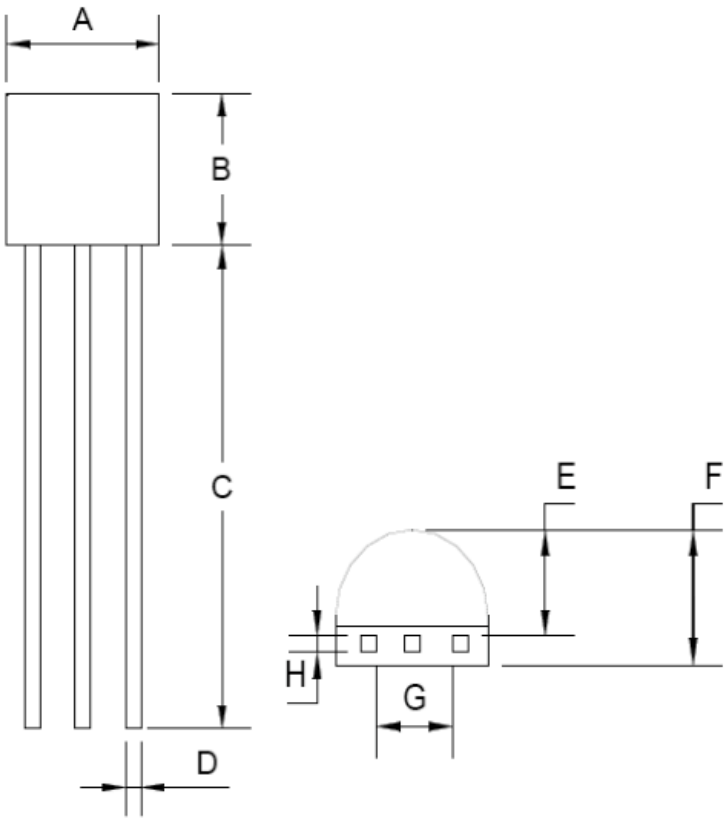


Switching Test Circuit



Switchin Waveforms

TO-92 Mechanical Drawing



TO-92 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.30	4.70	0.169	0.185
B	4.30	4.70	0.169	0.185
C	14.30(typ)		0.563(typ)	
D	0.43	0.49	0.017	0.019
E	2.19	2.81	0.086	0.111
F	3.30	3.70	0.130	0.146
G	2.42	2.66	0.095	0.105
H	0.37	0.43	0.015	0.017

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.