TSM2N7000

60V N-Channel Enhancement Mode MOSFET

TO-92

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

V_{DS} = 60V
I_D = 200mA
$R_{DS\ (on)}$, Vgs @ 10V, Ids @ 500mA = 5.0Ω

General Description

The TSM2N7000 is produced using high cell density, DMOS technology. These products have been designed to minimize on-state resistance while provide rugged, reliable and fast switching performance. It can be used in most applications requiring up to 200mA DC and can deliver pulsed currents up to 500mA. This product is particularly suited for low voltage, low current application such as small servo motor control, power MOSFET gate drivers, and other switching applications.

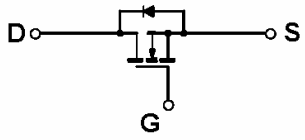
Features

- ✧ High density cell design for low on-resistance
- ✧ Voltage control small signal switch
- ✧ Rugged and reliable
- ✧ High saturation current capability
- ✧ Provide in TO-92 package

Ordering Information

Part No.	Packing	Package
TSM2N7000CT A3	Ammo pack	TO-92
TSM2N7000CT B0	Bulk pack	

Block Diagram



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

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	60	V
Drain-Gate Voltage		V_{DGR}	60	V
Gate-Source Voltage --- Continuous		V_{GS}	± 20	V
--- Pulsed		V_{GSM}	± 40	
Continuous Drain Current		I_D	200	mA
Pulsed Drain Current		I_{DM}	500	mA
Maximum Power Dissipation	Ta = 25°C	P_D	350	mW
	Ta > 25°C		2.8	mW/°C
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	Rθja	357	°C/W

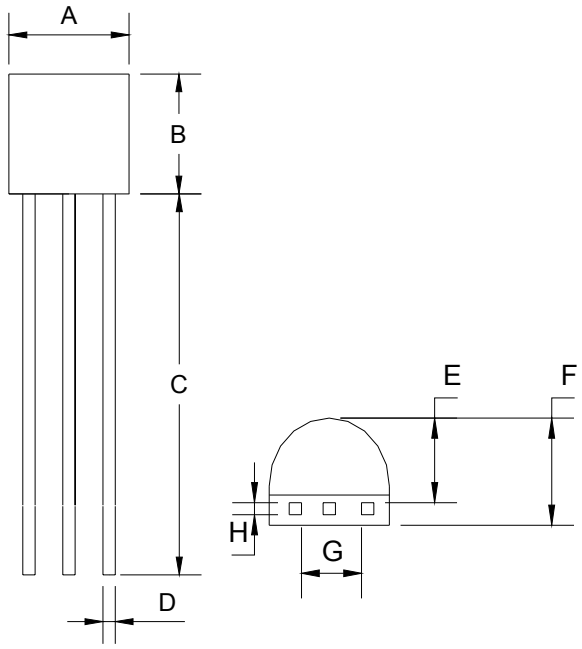
Electrical Characteristics

Tj = 25 °C unless otherwise noted

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 10uA	BV_{DSS}	60	--	--	V
Drain-Source On-State Resistance *	V_{GS} = 10V, I_D = 500mA	$R_{DS(ON)}$	--	--	5.0	Ω
	V_{GS} = 5V, I_D = 50mA	$R_{DS(ON)}$	--	7.5	--	
Drain-Source On-Voltage *	V_{GS} = 0V, I_D = 10uA	$V_{DS(ON)}$	--	--	2.5	V
Gate Threshold Voltage *	V_{DS} = V_{GS}, I_D = 1.0mA	$V_{GS(TH)}$	0.8	--	3.0	V
Zero Gate Voltage Drain Current	V_{DS} = 48V, V_{GS} = 0V	I_{DSS}	--	--	1.0	uA
Gate Body Leakage - Forward	V_{GS} = 15V, V_{DS} = 0V	I_{GSS}	--	--	- 10	nA
On-State Drain Current	V_{DS} □ 5V, V_{GS} = 10V	$I_{D(ON)}$	60	--	--	mA
Dynamic						
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	--	
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	--	
Source-Drain Diode						
Max. Diode Forward Current		I_S	--	--	500	mA
Diode Forward Voltage	I_S = 200mA, V_{GS} = 0V	V_{SD}	--	1.3	1.5	V

* Note : pulse test: pulse width <=300uS, duty cycle <=2%

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