



TSM2N7000

60V N-Channel Enhancement Mode MOSFET

TO-92



Pin assignment:

1. Gate
2. Source
3. Drain

$V_{DS} = 60V$

$I_D = 200mA$

$R_{DS(on)}, V_{GS} @ 10V, I_{DS} @ 500mA = 5.0\Omega$

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.

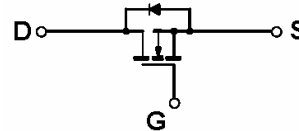
Features

- ◇ 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 --- Pulsed	V_{GS}	± 20	V
	V_{GSM}	± 40	
Continuous Drain Current	I_D	200	mA
Pulsed Drain Current	I_{DM}	500	mA
Maximum Power Dissipation	P_D	Ta = 25 °C	350
		Ta > 25 °C	2.8
Operating Junction Temperature	T_J	+150	°C
Operating Junction and Storage Temperature Range	T_J, T_{STG}	- 55 to +150	°C

Thermal Performance

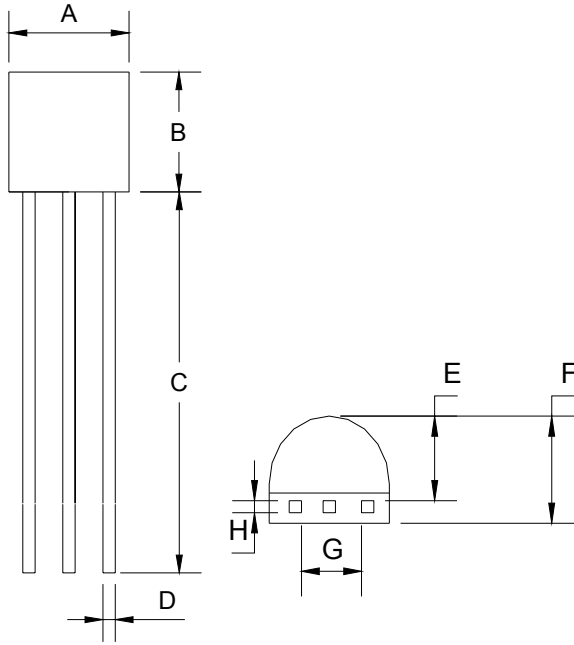
Parameter	Symbol	Limit	Unit
Lead Temperature (1/8" from case)	T_L	10	S
Junction to Ambient Thermal Resistance	$R_{\theta ja}$	357	°C/W



Electrical Characteristics						
Tj = 25 °C unless otherwise noted						
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 10\mu A$	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 *	$V_{GS} = 0V, I_D = 10\mu A$	$V_{DS(ON)}$	--	--	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	μA
Gate Body Leakage - Forward	$V_{GS} = 15V, V_{DS} = 0V$	I_{GSS}	--	--	- 10	nA
On-State Drain Current	$V_{DS} \leq 5V, V_{GS} = 10V$	$I_{D(ON)}$	60	--	--	mA
Dynamic						
Turn-On Rise Time *	$V_{DD} = 15V, R_L = 30\Omega,$ $I_D = 500mA,$ $V_{GEN} = 10V, R_G = 25\Omega$	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 $\leq 300\mu S$, duty cycle $\leq 2\%$

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