

TO-92



Pin Definition:

1. Source
2. Gate
3. Drain

PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (mA)
60	5 @ $V_{GS} = 10V$	100
	5.5 @ $V_{GS} = 5V$	100

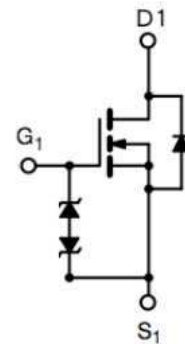
Features

- Low On-Resistance
- ESD Protection
- High Speed Switching
- Low Voltage Drive

Ordering Information

Part No.	Package	Packing
TSM2N7000KCT B0	TO-92	1Kpcs / Bulk
TSM2N7000KCT A3	TO-92	2Kpcs / Ammo

Block Diagram



N-Channel MOSFET

Absolute Maximum Rating ($T_a = 25^\circ C$ 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
	Pulsed	I_{DM}	700
Drain Reverse Current	Continuous @ $T_A=25^\circ C$	I_{DR}	300
	Pulsed	I_{DMR}	700
Maximum Power Dissipation	P_D	400	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	10	S
Junction to Ambient Thermal Resistance (PCB mounted)	$R_{\theta JA}$	357	$^\circ C/W$

Notes:

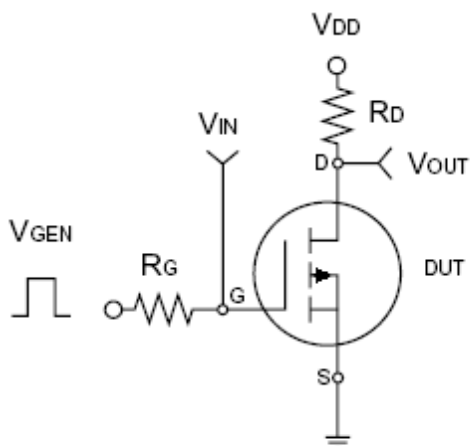
- a. Pulse width limited by the Maximum junction temperature
- b. Surface Mounted on FR4 Board, $t \leq 5$ sec.

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

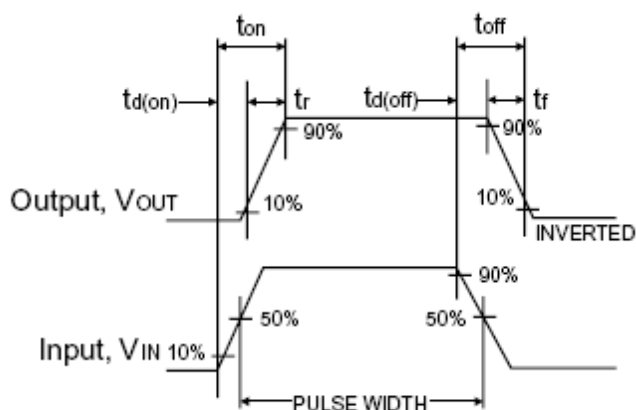
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 10μA	BV _{DSS}	60	--	--	V
Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	V _{GS(TH)}	1.0	--	2.5	V
Gate Body Leakage	V _{GS} = ±20V, V _{DS} = 0V	I _{GSS}	--	--	±10	μA
Zero Gate Voltage Drain Current	V _{DS} = 60V, V _{GS} = 0V	I _{DSS}	--	--	1.0	μA
Drain-Source On-State Resistance	V _{GS} = 10V, I _D = 100mA	R _{DS(ON)}	--	3	5	Ω
	V _{GS} = 5V, I _D = 100mA		--	3.6	5.5	
Forward Transconductance	V _{DS} = 10V, I _D = 200mA	g _{fs}	100	--	--	mS
Diode Forward Voltage	I _S = 300mA, V _{GS} = 0V	V _{SD}	--	0.9	1.2	V
Dynamic^b						
Total Gate Charge	V _{DS} = 10V, I _D = 250mA, V _{GS} = 4.5V	Q _g	--	0.4	--	nC
Input Capacitance	V _{DS} = 25V, V _{GS} = 0V, f = 1.0MHz	C _{iss}	--	7.32	--	pF
Output Capacitance		C _{oss}	--	3.42	--	
Reverse Transfer Capacitance		C _{rss}	--	7.63	--	
Switching^c						
Turn-On Delay Time	V _{DD} = 30V, R _G = 10Ω	t _{d(on)}	--	25	--	nS
Turn-Off Delay Time	I _D = 100mA, V _{GEN} = 10V,	t _{d(off)}	--	35	--	

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.



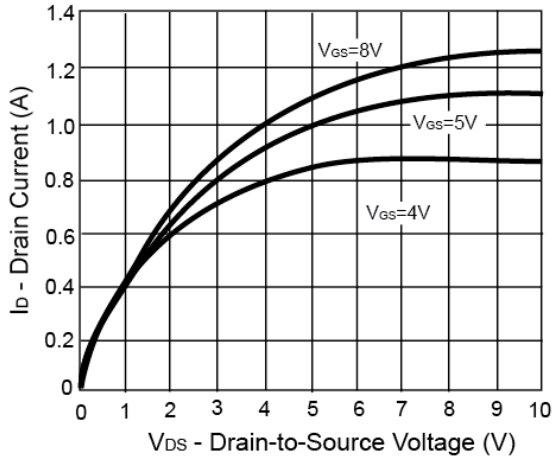
Switching Test Circuit



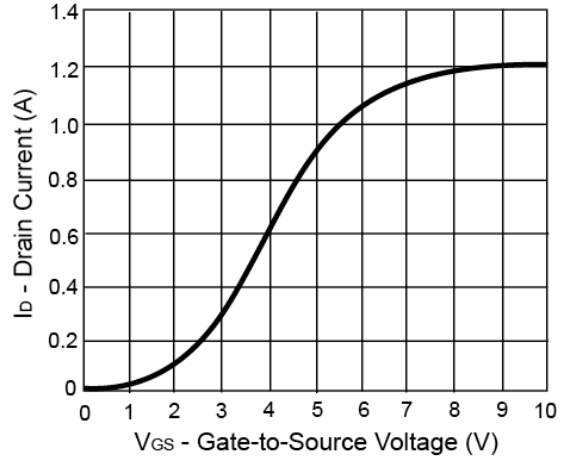
Switchin Waveforms

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

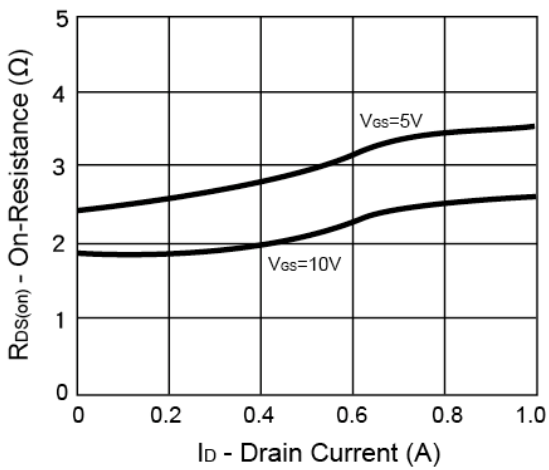
Output Characteristics



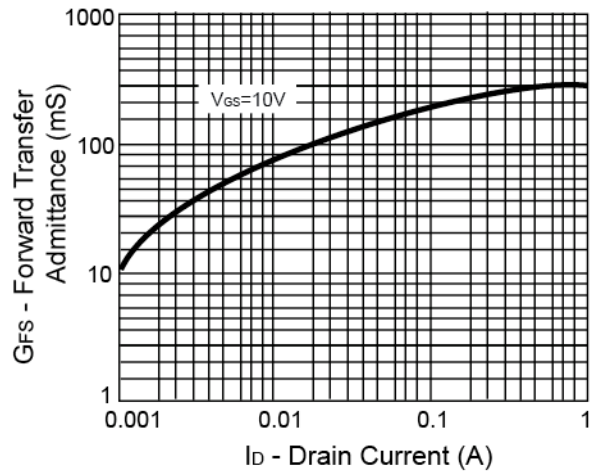
Transfer Characteristics



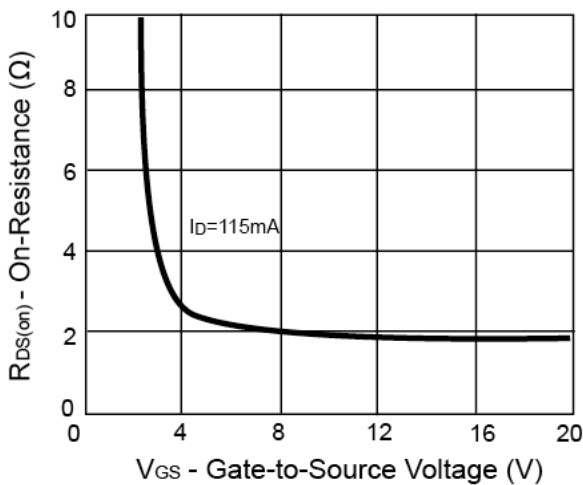
On-Resistance vs. Drain Current



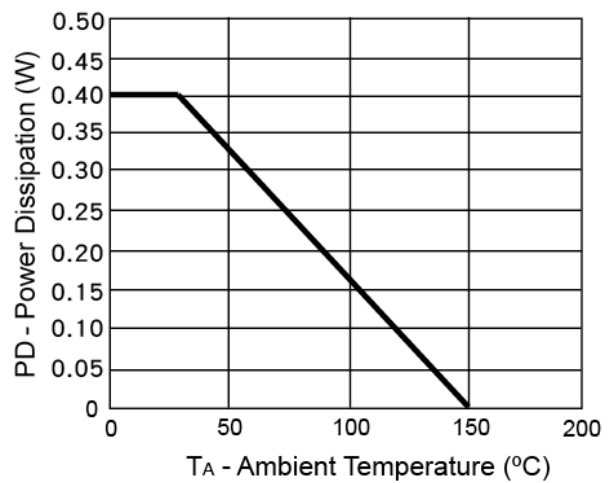
Forward Transfer Admittance vs. Drain Current



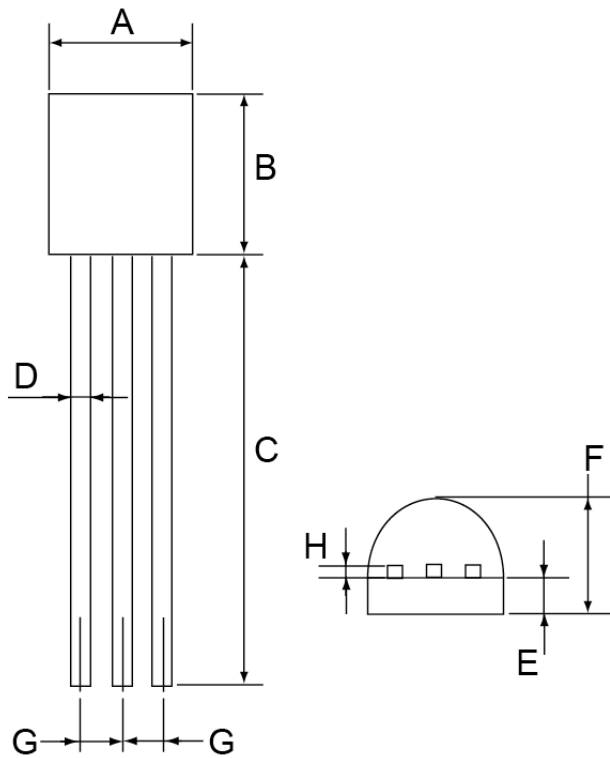
On-Resistance vs. Gate-Source Voltage



Power Derating Curve

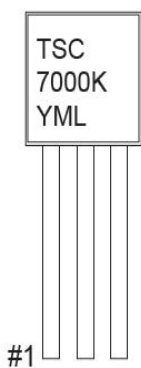


TO-92 Mechanical Drawing



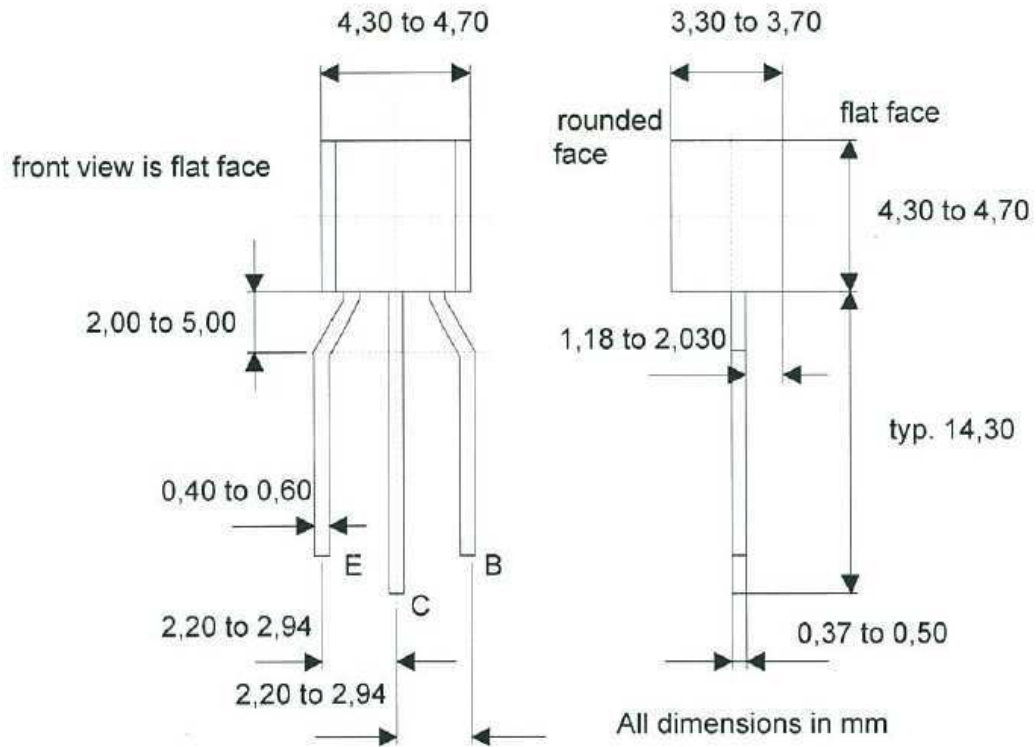
TO-92 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.30	4.70	0.169	0.185
B	4.30	4.70	0.169	0.185
C	13.53 (typ)		0.532 (typ)	
D	0.39	0.49	0.015	0.019
E	1.18	1.28	0.046	0.050
F	3.30	3.70	0.130	0.146
G	1.27	1.31	0.050	0.051
H	0.33	0.43	0.013	0.017

Marking Diagram



- Y** = Year Code
- M** = Month Code
(**A**=Jan, **B**=Feb, **C**=Mar, **D**=Apr, **E**=May, **F**=Jun, **G**=Jul, **H**=Aug, **I**=Sep, **J**=Oct, **K**=Nov, **L**=Dec)
- L** = Lot Code

TO-92 Ammo Pack Mechanical Drawing



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