GENERAL DESCRIPTION

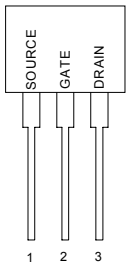
This N-Channel enhancement mode field effect transistor is produced using high cell density, DMOS technology. These products have been designed to minimize on-state resistance while provide rugged, reliable, and fast switching performance. It can be used in most applications requiring up to 200mA DC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

FEATURES

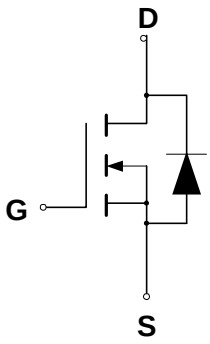
- High Density Cell Design for Low $R_{DS(ON)}$
- Voltage Controlled Small Signal Switch
- Rugged and Reliable
- High Saturation Current Capability

PIN CONFIGURATION

TO-92
Top View



SYMBOL



N-Channel MOSFET

ORDERING INFORMATION

Part Number	Package
CMT2N7000	TO-92

ABSOLUTE MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain Source Voltage	V_{DSS}	60	V
Drain-Gate Voltage (R_{GS} = 1.0MΩ)	V_{DGR}	60	V
Drain to Current — Continuous	I_D	200	mA
— Pulsed	I_{DM}	500	
Gate-to-Source Voltage — Continue	V_{GS}	±20	V
— Non-repetitive	V_{GSM}	±40	V
Total Power Dissipation	P_D	350	mW
Derate above 25℃		2.8	mW/℃
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	℃
Thermal Resistance — Junction to Ambient	θ_{JA}	357	℃/W
Maximum Lead Temperature for Soldering Purposes, 1/8" from case for 10 seconds	T_L	300	℃

ELECTRICAL CHARACTERISTICS

Unless otherwise specified, T_J = 25℃.

Characteristic		Symbol	CMT2N7000 Min	Typ	Max	Units
Drain-Source Breakdown Voltage (V_{GS} = 0 V, I_D = 10 μA)		$V_{(BR)DSS}$	60			V
Drain-Source Leakage Current		I_{DSS}				
(V_{DS} = 48 V, V_{GS} = 0 V)					1.0	μA
(V_{DS} = 48 V, V_{GS} = 0 V, T_J = 125℃)					1.0	mA
Gate-Source Leakage Current-Forward (V_{gsf} = 15 V, V_{DS} = 0 V)		I_{GSSF}			-10	nA
Gate Threshold Voltage * (V_{DS} = V_{GS}, I_D = 1.0 mA)		$V_{GS(th)}$	0.8		3.0	V
Static Drain-Source On-Resistance * (V_{GS} = 10 V, I_D = 0.5A)		$R_{DS(on)}$			5.0	Ω
Drain-Source On-Voltage * (V_{GS} = 10 V, I_D = 0.5A)		$V_{DS(on)}$			2.5	V
On-State Drain Current * (V_{GS} = 5 V, V_{DS} = 10 V)		$I_{d(on)}$	60			mA
Forward Transconductance (V_{DS} = 10 V, I_D = 200mA) *		g_{FS}	100			mmhos
Input Capacitance	(V_{DS} = 25 V, V_{GS} = 0 V, f = 1.0 MHz)	C_{iss}			60	pF
Output Capacitance		C_{oss}			25	pF
Reverse Transfer Capacitance		C_{rss}			5.0	pF
Turn-On Delay Time	(V_{DD} = 15 V, I_D = 500 mA,	$t_{d(on)}$			10	ns
Turn-Off Delay Time	V_{gen} = 10 V, R_G = 25Ω, R_L = 30Ω) *	$t_{d(off)}$			10	ns

* Pulse Test: Pulse Width ≦300μs, Duty Cycle ≦2%

TYPICAL ELECTRICAL CHARACTERISTICS

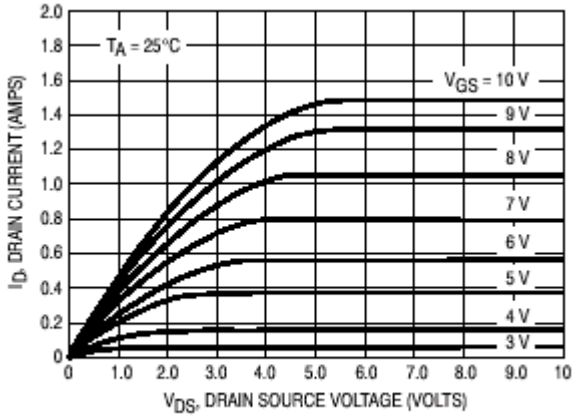


Figure 1. Ohmic Region

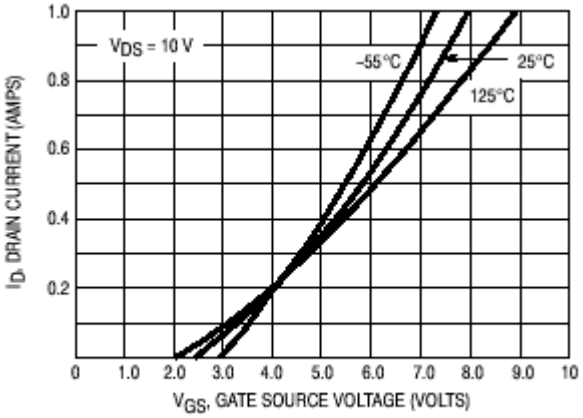


Figure 2. Transfer Characteristics

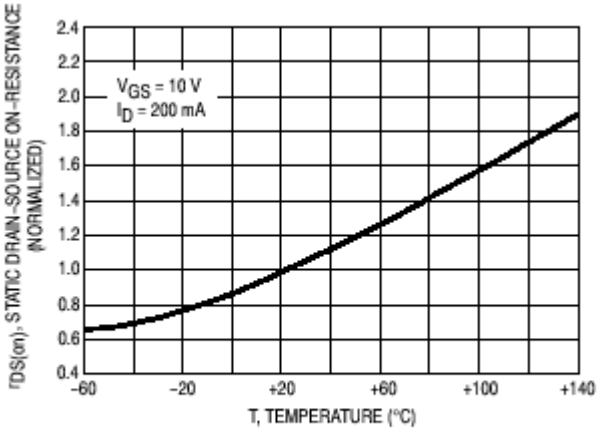


Figure 3. Temperature versus Static Drain–Source On–Resistance

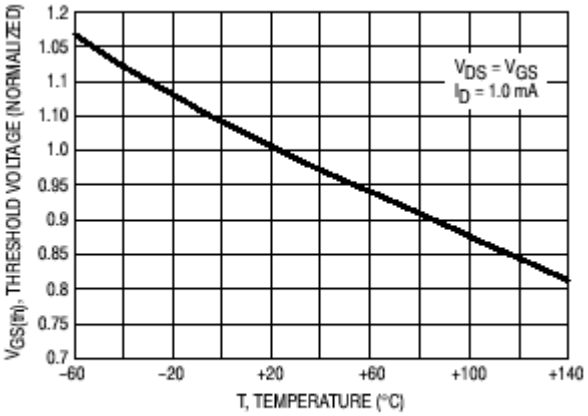
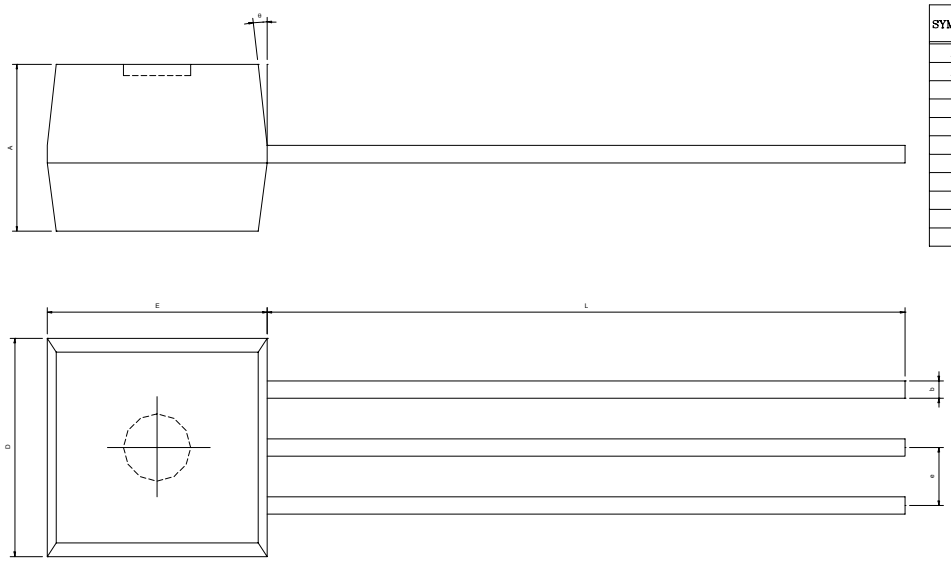


Figure 4. Temperature versus Gate Threshold Voltage

PACKAGE DIMENSION

TO-92



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	3.45	3.56	3.66	0.136	0.140	0.144
A1	1.22	1.30	1.37	0.048	0.051	0.054
b	---	0.38	---	---	0.015	---
D	4.27	4.52	4.78	0.168	0.178	0.188
D1	4.14	4.29	4.45	0.163	0.169	0.175
E	4.32	4.57	4.83	0.170	0.180	0.190
L	12.98	13.49	14.00	0.511	0.531	0.551
e	---	1.27	---	---	0.050	---
θ	---	5°	---	---	5°	---
θ1	---	5°	---	---	5°	---

IMPORTANT NOTICE

Champion Microelectronic Corporation (CMC) reserves the right to make changes to its products or to discontinue any integrated circuit product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

A few applications using integrated circuit products may involve potential risks of death, personal injury, or severe property or environmental damage. CMC integrated circuit products are not designed, intended, authorized, or warranted to be suitable for use in life-support applications, devices or systems or other critical applications. Use of CMC products in such applications is understood to be fully at the risk of the customer. In order to minimize risks associated with the customer's applications, the customer should provide adequate design and operating safeguards.

HsinChu Headquarter

5F, No. 11, Park Avenue II,
Science-Based Industrial Park,
HsinChu City, Taiwan
TEL: +886-3-567 9979
FAX: +886-3-567 9909

Sales & Marketing

11F, No. 306-3, SEC. 1, Ta Tung Road,
Hsichih, Taipei Hsien 221, Taiwan

TEL: +886-2-8692 1591
FAX: +886-2-8692 1596