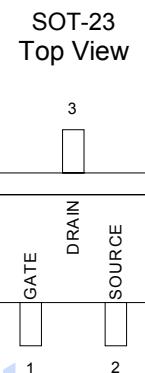


GENERAL DESCRIPTION

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 providing rugged, reliable, and fast switching performance. 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.

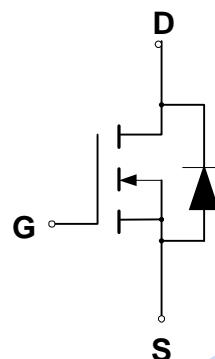
PIN CONFIGURATION



FEATURES

- ◆ Low On-Resistance: 3Ω
- ◆ Low Threshold: 2V (typ.)
- ◆ Low Input Capacitance: 25pF
- ◆ Fast Switching Speed: 7.5ns
- ◆ Low Input and Output Leakage

SYMBOL



N-Channel MOSFET

ORDERING INFORMATION

Part Number	Package
CMT2N7002E	SOT-23

ABSOLUTE MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain Source Voltage	V_{DSS}	60	V
Drain-Gate Voltage ($R_{GS} = 1.0M\Omega$)	V_{DGR}	60	V
Continuous Drain Current ($T_J = 150^{\circ}\text{C}$)	I_D	240	mA
$T_A = 70^{\circ}\text{C}$		190	
Pulsed Drain Current (Note 1)	I_{DM}	1300	mA
Gate-to-Source Voltage	V_{GS}	± 20	V
Total Power Dissipation	P_D	0.35	W
$T_A = 70^{\circ}\text{C}$		0.22	
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C
Thermal Resistance — Junction to Ambient	θ_{JA}	357	°C/W

Note1: Pulse Width limited by maximum junction temperature.

ELECTRICAL CHARACTERISTICS

Unless otherwise specified, $T_J = 25^\circ\text{C}$.

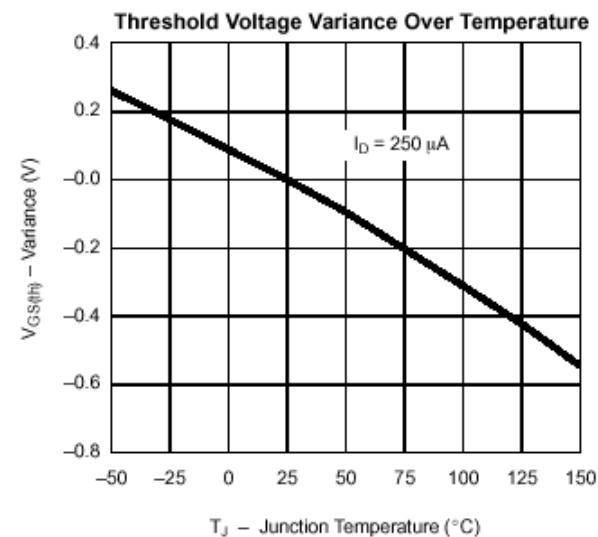
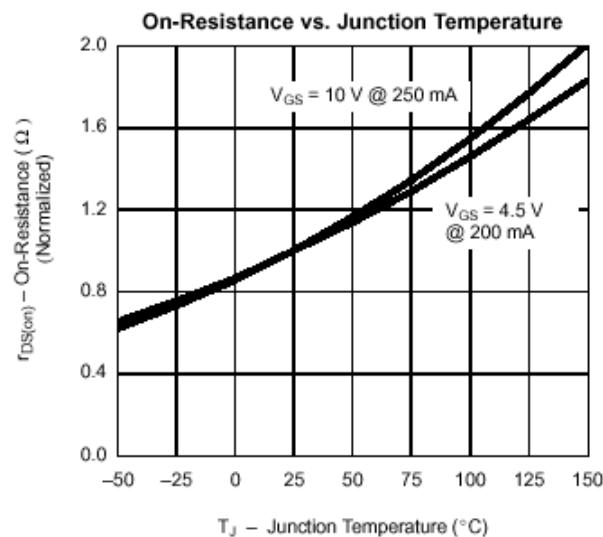
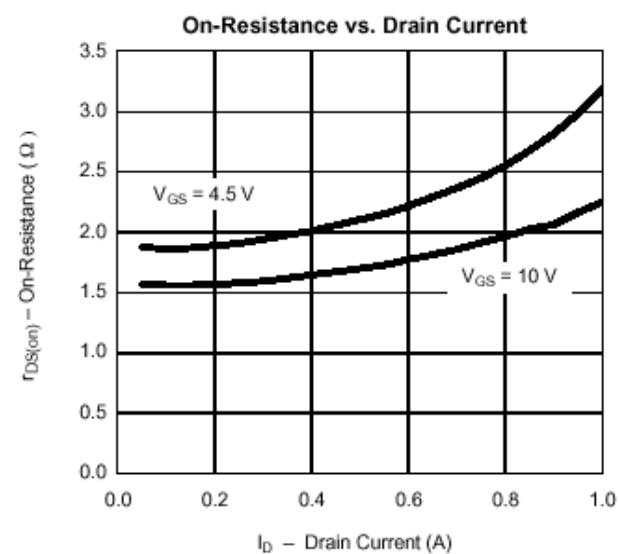
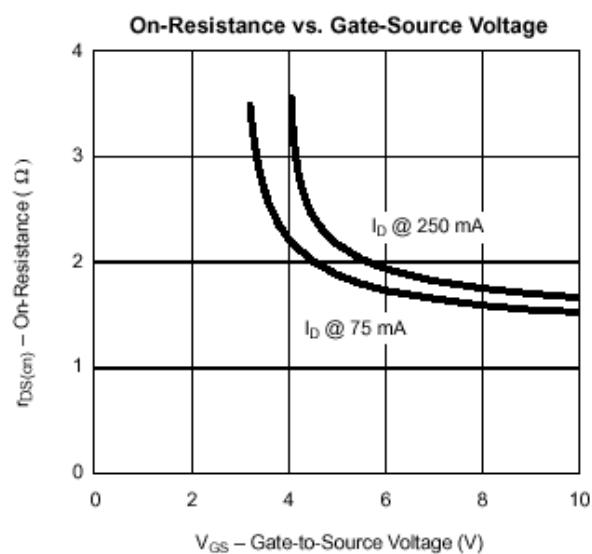
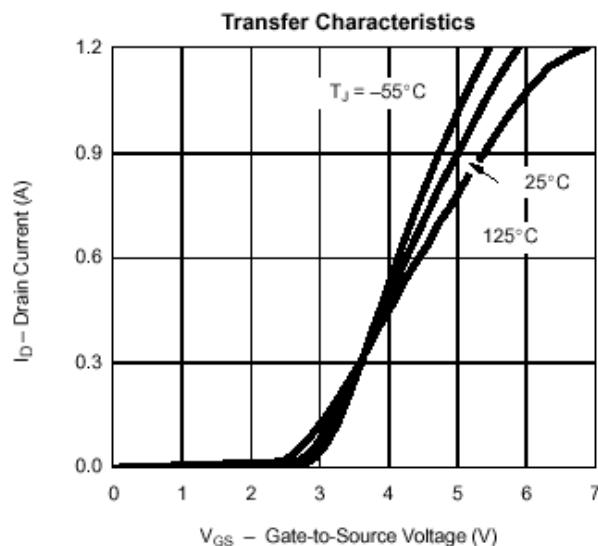
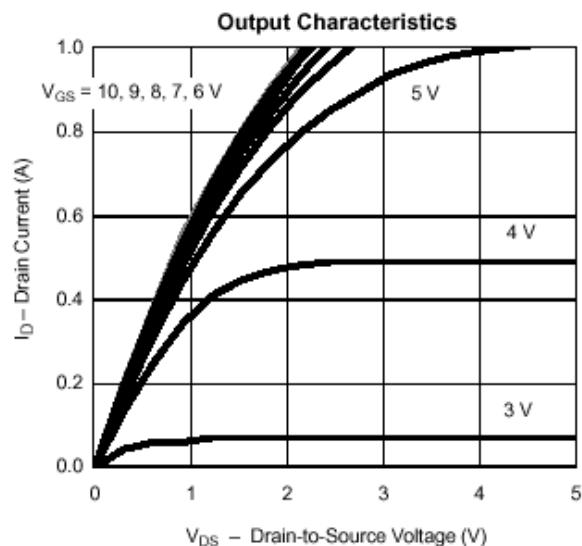
Characteristic	Symbol	CMT2N7002E			
		Min	Typ	Max	Units
Drain-Source Breakdown Voltage ($V_{GS} = 0 \text{ V}$, $I_D = 10 \mu\text{A}$)	$V_{(BR)DSS}$	60	68		V
Zero Gate Voltage Drain Current ($V_{DS} = 60 \text{ V}$, $V_{GS} = 0 \text{ V}$) ($V_{DS} = 60 \text{ V}$, $V_{GS} = 0 \text{ V}$, $T_C = 125^\circ\text{C}$)	I_{DSS}			1.0 500	μA μA
Gate Body Leakage ($V_{DS} = 0 \text{ V}$, $V_{GS} = \pm 15 \text{ V}$)	I_{GSS}			± 10	nA
Gate Threshold Voltage * ($V_{DS} = V_{GS}$, $I_D = 250 \mu\text{A}$)	$V_{GS(\text{th})}$	1.0	2.0	2.5	V
On-State Drain Current (Note 2) ($V_{DS} = 7.5 \text{ V}$, $V_{GS} = 10 \text{ V}$) ($V_{DS} = 10 \text{ V}$, $V_{GS} = 4.5 \text{ V}$)	$I_{d(\text{on})}$	800 500	1300 700		mA
Static Drain-Source On-Resistance (Note 2) ($V_{GS} = 10 \text{ V}$, $I_D = 0.25 \text{ A}$) ($V_{GS} = 4.5 \text{ V}$, $I_D = 0.2 \text{ A}$)	$R_{DS(\text{on})}$		1.2 1.8	3 4	Ω
Diode Forward On-Voltage ($I_S = 200 \text{ mA}$, $V_{GS} = 0 \text{ V}$)	V_{SD}		0.85	1.2	V
Forward Transconductance ($V_{DS} = 15 \text{ V}$, $I_D = 200 \text{ mA}$) (Note 2)	g_{FS}		600		mmhos
Total Gate Charge	Q_g		0.4	0.6	nC
Gate-Source Charge	Q_{gs}		0.06		nC
Gate-Drain Charge	Q_{gd}		0.06		nC
Input Capacitance	C_{iss}		21		pF
Output Capacitance	C_{oss}		7		pF
Reverse Transfer Capacitance	C_{rss}		2.5		pF
Turn-On Delay Time (Note 1,3)	$t_{d(\text{on})}$		13	20	ns
Turn-Off Delay Time (Note 1,3)	$t_{d(\text{off})}$		18	25	ns

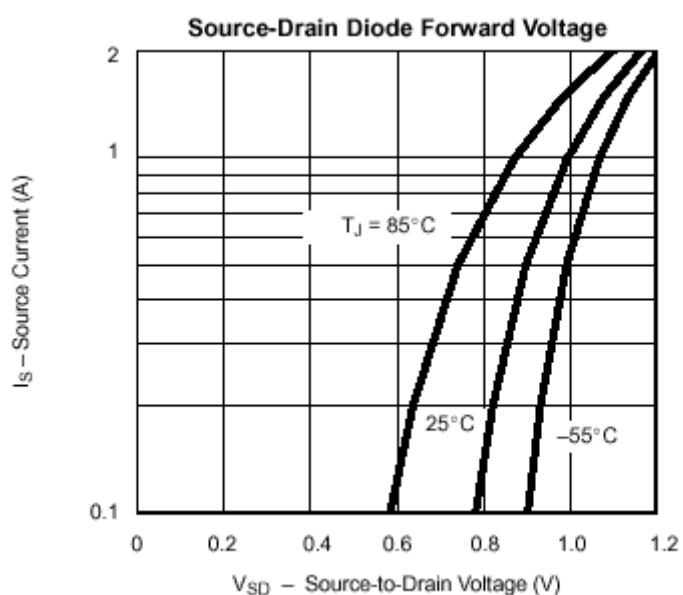
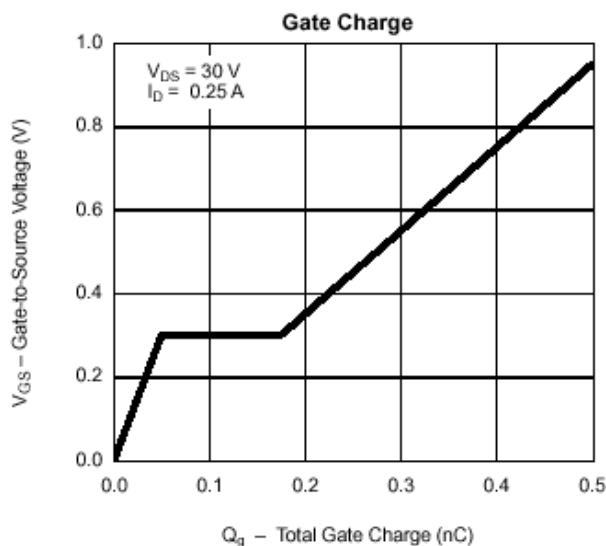
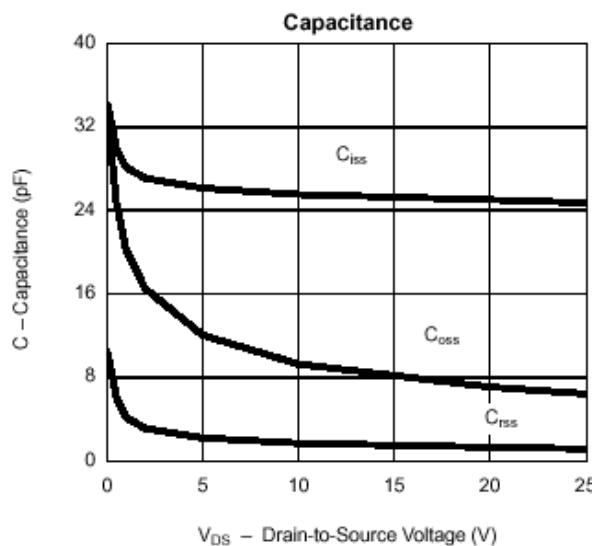
Note 1: For Design Aid Only, not subject to production testing.

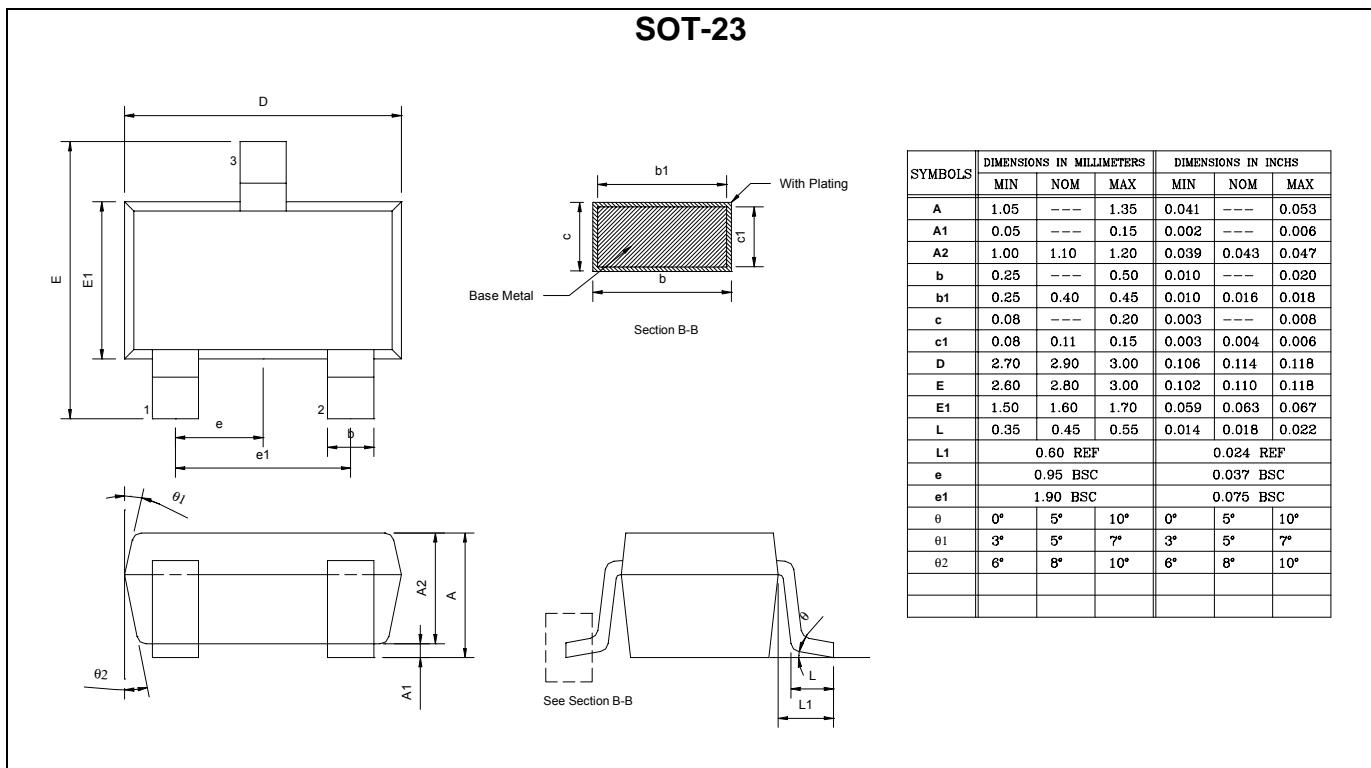
Note 2: Pulse test: PW <= 300 μs duty cycle <=2%

Note 3: Switching time is essentially independent of operating temperature.

TYPICAL ELECTRICAL CHARACTERISTICS





PACKAGE DIMENSION




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.

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