

GENERAL DESCRIPTION

The CMT2301 is the P-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology.

This high density process is especially tailored to minimize on-state resistance.

These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits, and low in-line power loss are needed in a very small outline surface mount package.

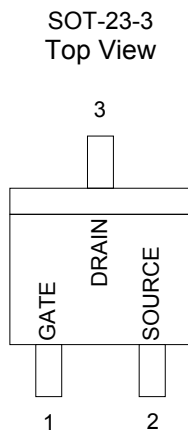
FEATURES

- ◆ -20V/-2.3A , $R_{DS(ON)}=130\text{ m}\Omega@V_{GS}=-4.5\text{V}$
- ◆ -20V/-1.9A , $R_{DS(ON)}=190\text{ m}\Omega@V_{GS}=-2.5\text{V}$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOT-23-3 package design

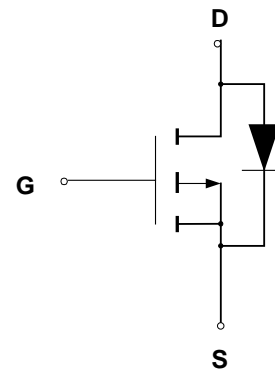
APPLICATIONS

- ◆ Power Management in Notebook
- ◆ Portable Equipment
- ◆ Battery Powered System
- ◆ DC/DC Converter
- ◆ Load Switch
- ◆ DSC
- ◆ LCD Display inverter

PIN CONFIGURATION



SYMBOL



P-Channel MOSFET

ORDERING INFORMATION

Part Number	Package
CMT2301M233	SOT-23-3
CMT2301GM233*	SOT-23-3

*Note: G : Suffix for Pb Free Product

ABSOLUTE MAXIMUM RATINGS

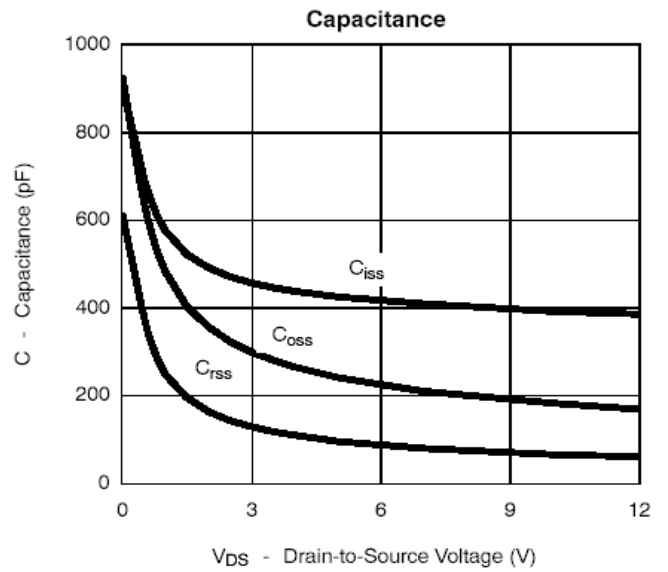
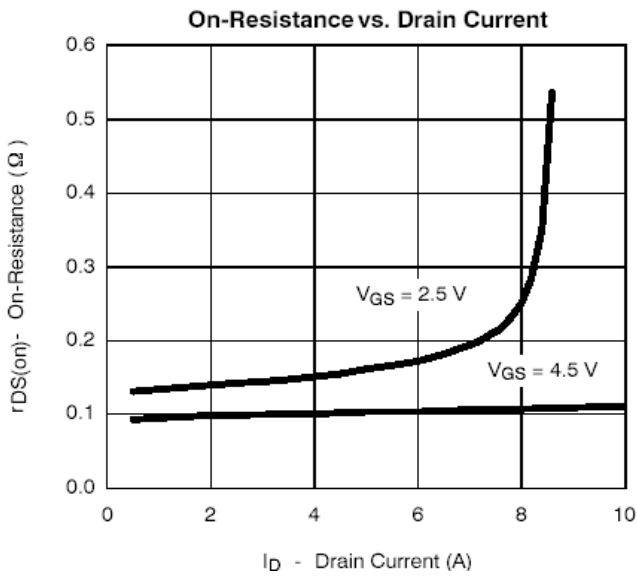
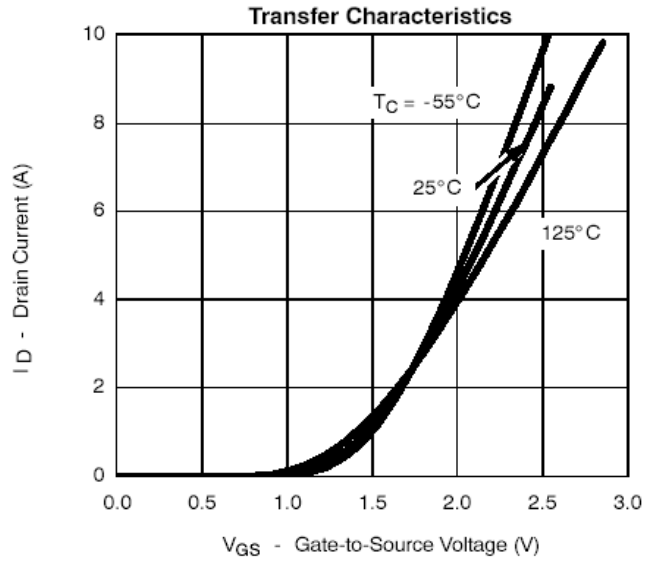
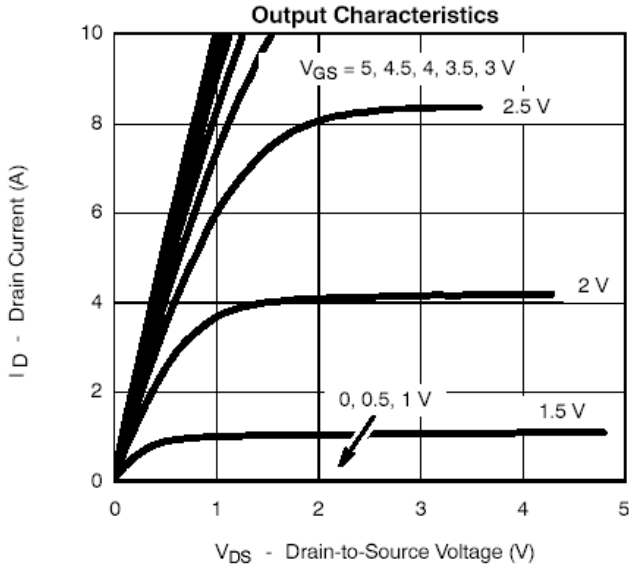
Rating	Symbol	Value	Unit	
Drain- to- Source Voltage	V_{DSS}	-20	V	
Gate-to-Source Voltage	V_{GSS}	± 8	V	
Continuous Drain Current($T_J=150^\circ\text{C}$)	I_D	$T_A=25^\circ\text{C}$	-2.5	A
		$T_A=70^\circ\text{C}$	-1.5	
Pulsed Drain Current	I_{DM}	-10	A	
Continuous Source Current(Diode Conduction)	I_S	-1.6	A	
Power Dissipation	P_D	$T_A=25^\circ\text{C}$	1.25	W
		$T_A=70^\circ\text{C}$	0.8	
Operating Junction Temperature	T_J	150	$^\circ\text{C}$	
Storage Temperature Range	T_{STG}	-55/150	$^\circ\text{C}$	
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	120	$^\circ\text{C/W}$	

ELECTRICAL CHARACTERISTICS

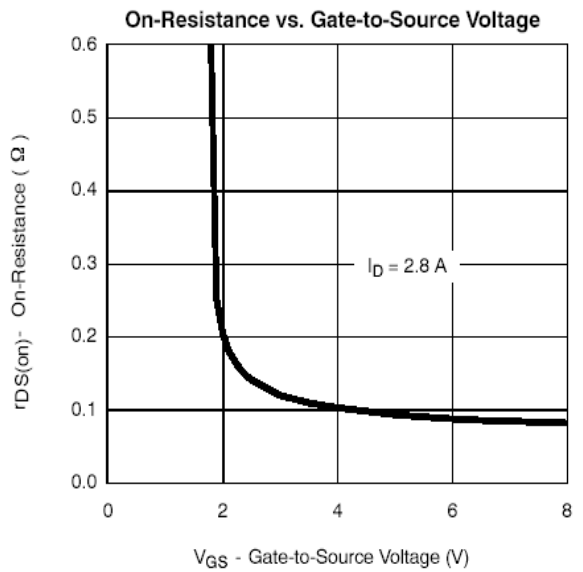
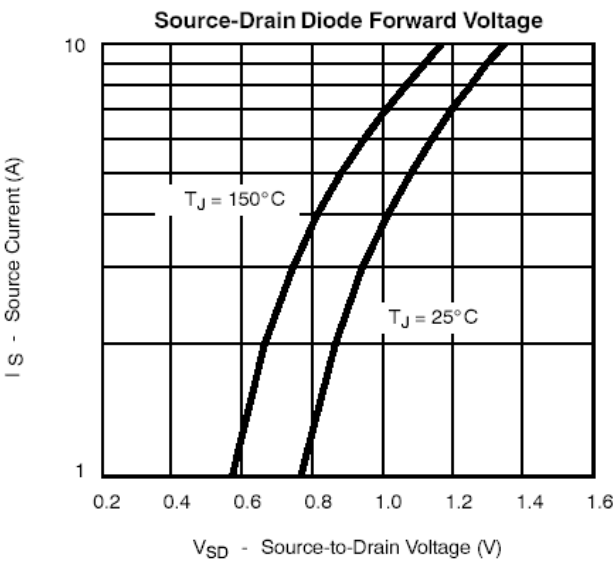
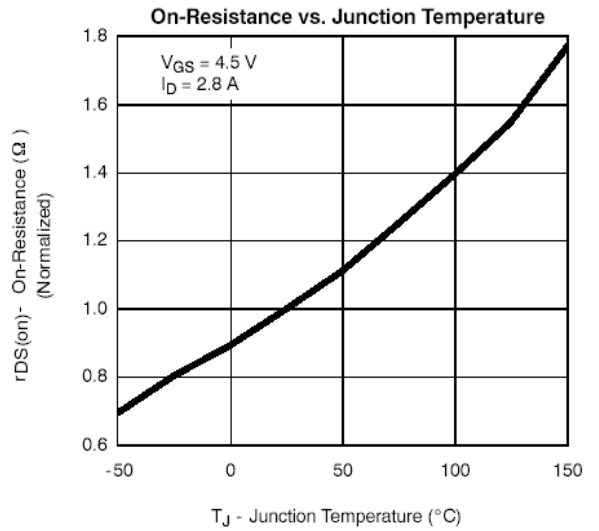
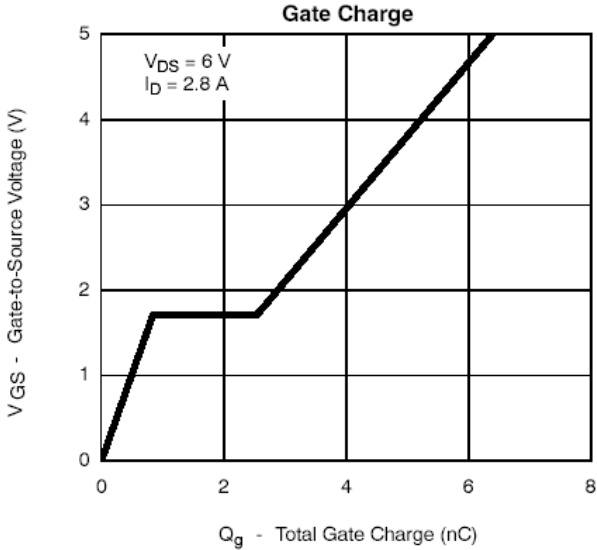
 Unless otherwise specified, $T_J = 25^\circ\text{C}$.

Characteristic	Symbol	CMT2301			Units
		Min	Typ	Max	
Static					
Drain-Source Breakdown Voltage ($V_{GS} = 0\text{ V}$, $I_D = -250\ \mu\text{A}$)	$V_{(BR)DSS}$	-20			V
Gate Threshold Voltage ($V_{DS} = V_{GS}$, $I_D = -250\ \mu\text{A}$)	$V_{GS(th)}$	-0.45		-1.5	V
Gate Leakage Current ($V_{DS} = 0\text{ V}$, $V_{GS} = \pm 8\text{ V}$)	I_{GSS}			± 100	nA
Zero Gate Voltage Drain Current ($V_{DS} = -20\text{ V}$, $V_{GS} = 0\text{ V}$) ($V_{DS} = -20\text{ V}$, $V_{GS} = 0\text{ V}$, $T_J = 55^\circ\text{C}$)	I_{DSS}			-1 -10	μA
On-State Drain Current ($V_{DS} \leq -5\text{ V}$, $V_{GS} = -4.5\text{V}$) ($V_{DS} \leq -5\text{ V}$, $V_{GS} = -2.5\text{V}$)	$I_{D(on)}$	-6 -3			A
Drain-Source On-Resistance ($V_{GS} = -4.5\text{ V}$, $I_D = -2.8\text{A}$) ($V_{GS} = -2.5\text{ V}$, $I_D = -2.0\text{A}$)	$R_{DS(on)}$		0.105 0.145	0.13 0.19	Ω
Forward Transconductance ($V_{DS} = -5\text{ V}$, $I_D = -2.8\text{V}$)	g_{FS}		6.5		S
Diode Forward Voltage ($I_S = -1.6\text{A}$, $V_{GS} = 0\text{V}$)	V_{SD}		-0.8	-1.2	V
Dynamic					
Input Capacitance	$(V_{DS} = -6\text{ V}$, $V_{GS} = -0\text{V}$, $f = 1.0\text{ MHz}$)	C_{iss}	415		pF
Output Capacitance		C_{oss}	223		
Reverse Transfer Capacitance		C_{rss}	87		
Turn-On Time	$(V_{DD} = -6\text{ V}$, $R_L = 6\Omega$ $I_D = -1.0\text{ A}$, $V_{GEN} = -4.5\text{ V}$, $R_G = 6\Omega$)	$t_{d(on)}$	13	25	ns
Turn-Off Time		t_r	36	60	
		$t_{d(off)}$	42	70	
		t_f	34	60	
Total Gate Charge	$(V_{DS} = -6\text{ V}$, $I_D = -2.8\text{ A}$, $V_{GS} = -4.5\text{V}$)	Q_g	5.8	10	nC
Gate-Source Charge		Q_{gs}	0.85		
Gate-Drain Charge		Q_{gd}	1.7		

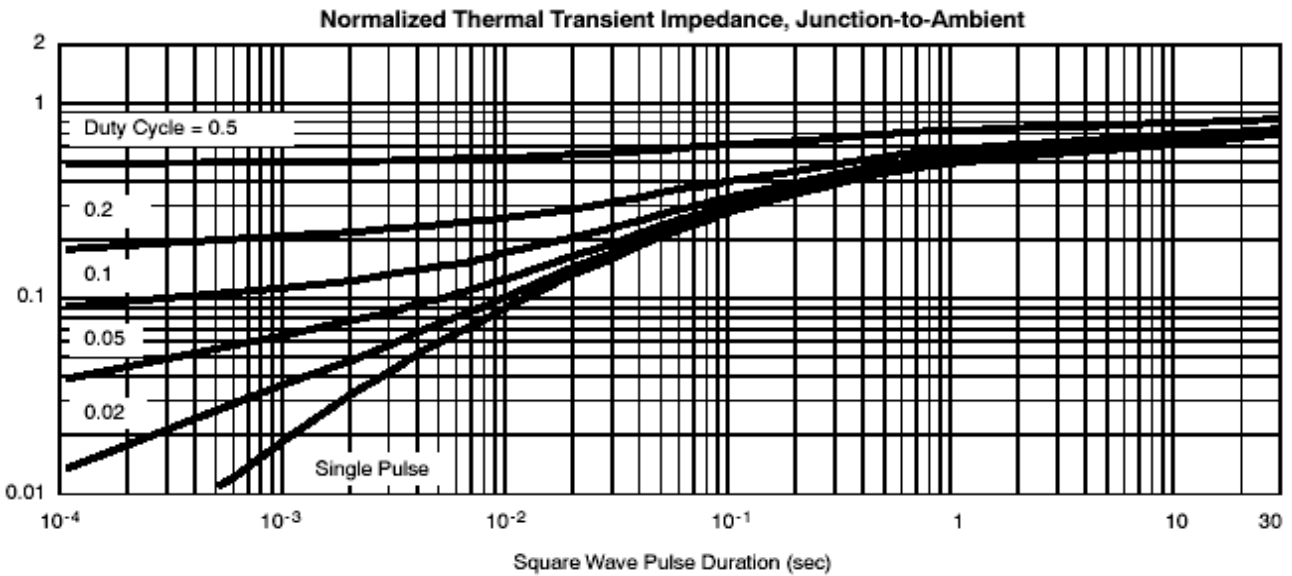
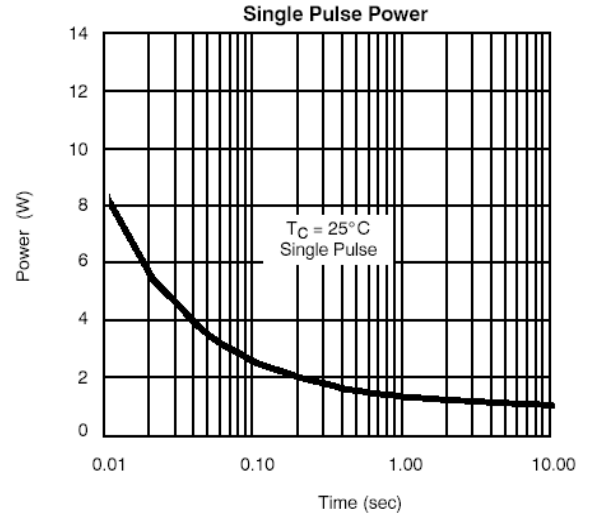
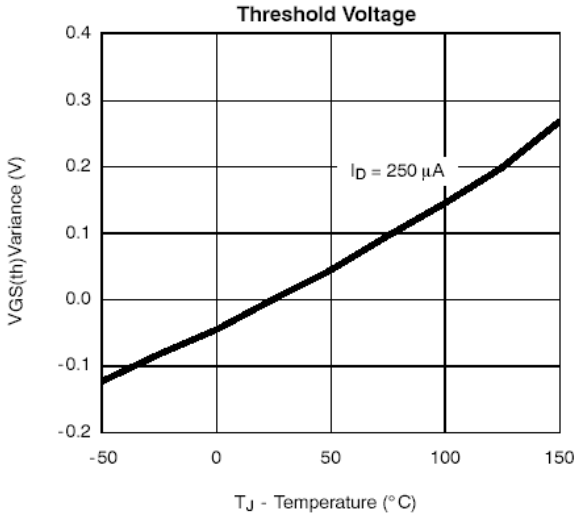
TYPICAL CHARACTERISTICS



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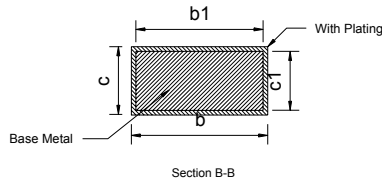
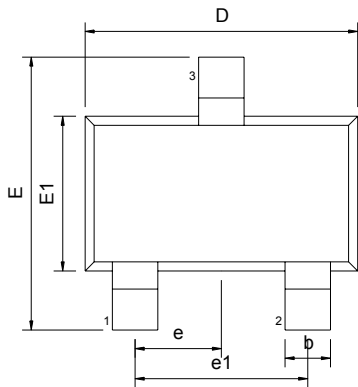


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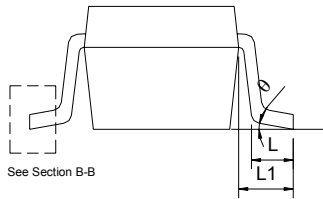
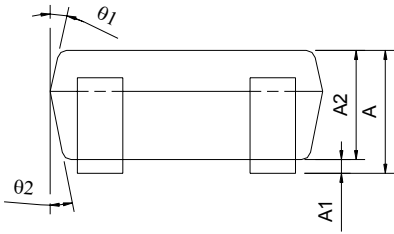


PACKAGE DIMENSION

SOT-23-3



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.05	---	1.35	0.041	---	0.053
A1	0.05	---	0.15	0.002	---	0.006
A2	1.00	1.10	1.20	0.039	0.043	0.047
b	0.25	---	0.50	0.010	---	0.020
b1	0.25	0.40	0.45	0.010	0.016	0.018
c	0.08	---	0.20	0.003	---	0.008
c1	0.08	0.11	0.15	0.003	0.004	0.006
D	2.70	2.90	3.00	0.106	0.114	0.118
E	2.60	2.80	3.00	0.102	0.110	0.118
E1	1.50	1.60	1.70	0.059	0.063	0.067
L	0.35	0.45	0.55	0.014	0.018	0.022
L1	0.60 REF			0.024 REF		
e	0.95 BSC			0.037 BSC		
e1	1.90 BSC			0.075 BSC		
θ	0°	5°	10°	0°	5°	10°
θ1	3°	5°	7°	3°	5°	7°
θ2	6°	8°	10°	6°	8°	10°



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