

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.

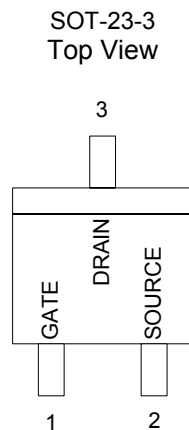
FEATURES

- ◆ -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

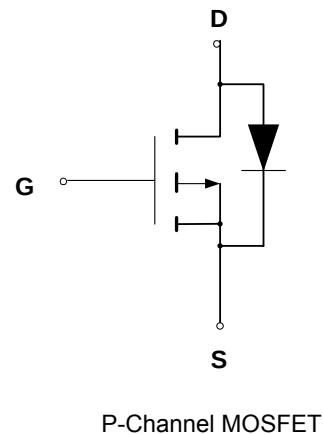
APPLICATIONS

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

PIN CONFIGURATION



SYMBOL



ORDERING INFORMATION

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

*Note: G : Suffix for Pb Free Product

ABSOLUTE MAXIMUM RATINGS

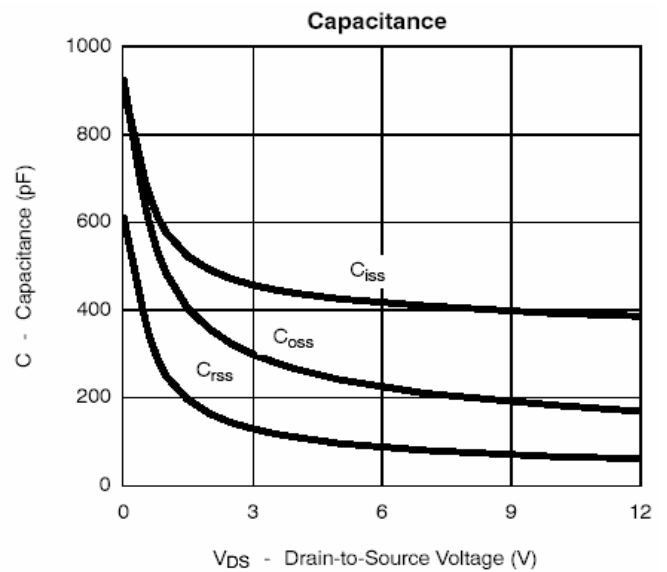
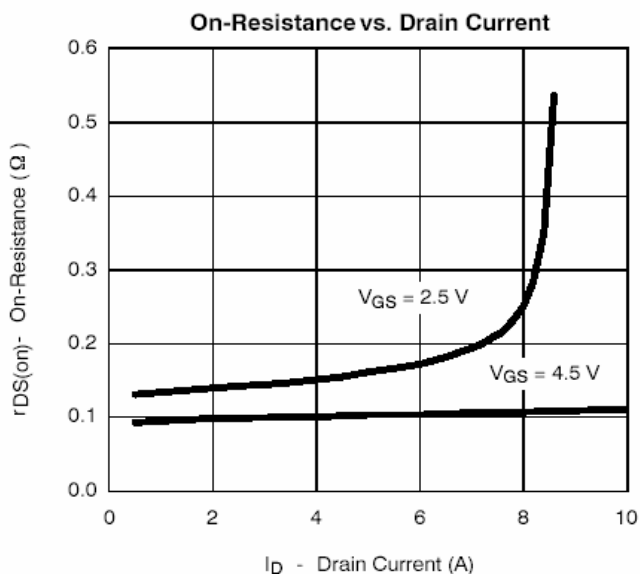
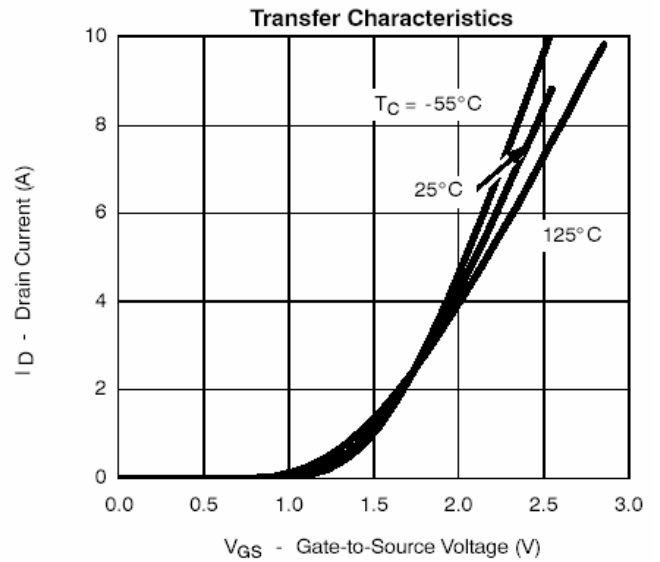
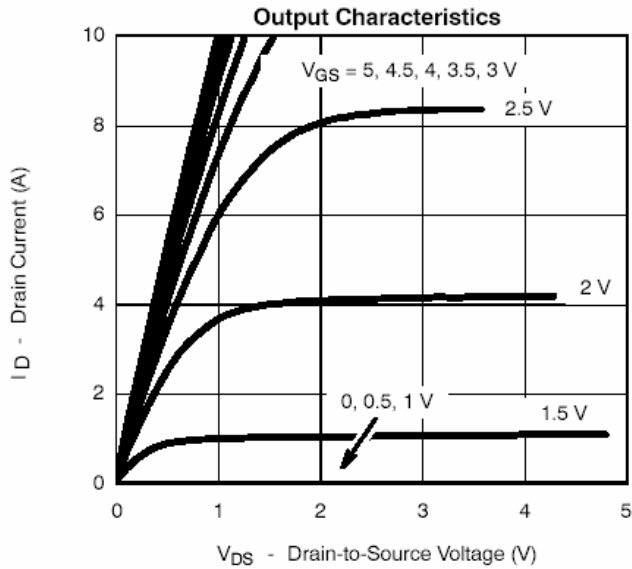
Rating		Symbol	Value	Unit
Drain- to- Source Voltage		V_{DSS}	-20	V
Gate-to-Source Voltage		V_{GSS}	± 8	V
Continuous Drain Current($T_J=150^{\circ}\text{C}$)	$T_A=25^{\circ}\text{C}$	I_D	-2.5	A
	$T_A=70^{\circ}\text{C}$		-1.5	
Pulsed Drain Current		I_{DM}	-10	A
Continuous Source Current(Diode Conduction)		I_S	-1.6	A
Power Dissipation	$T_A=25^{\circ}\text{C}$	P_D	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

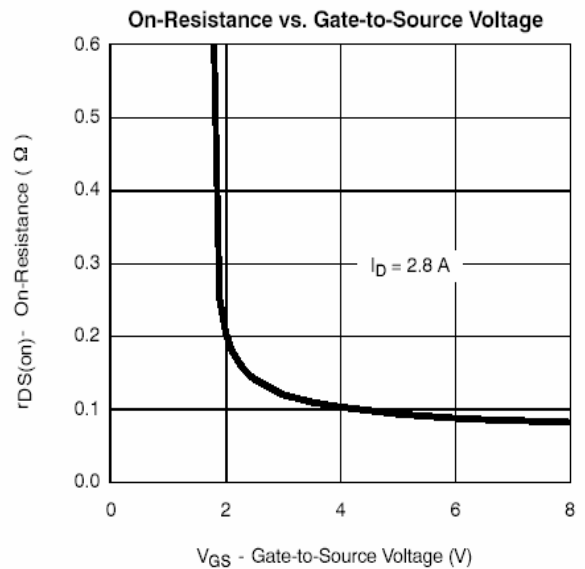
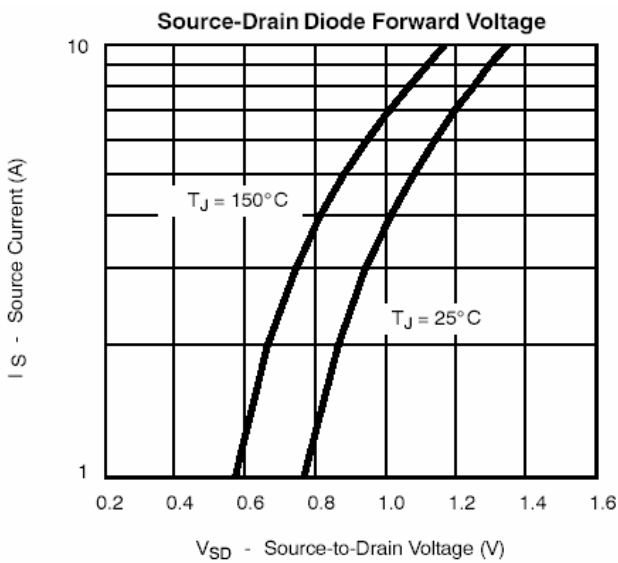
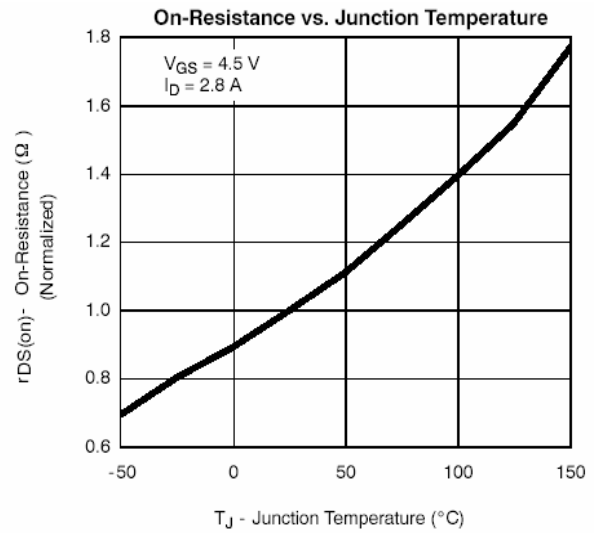
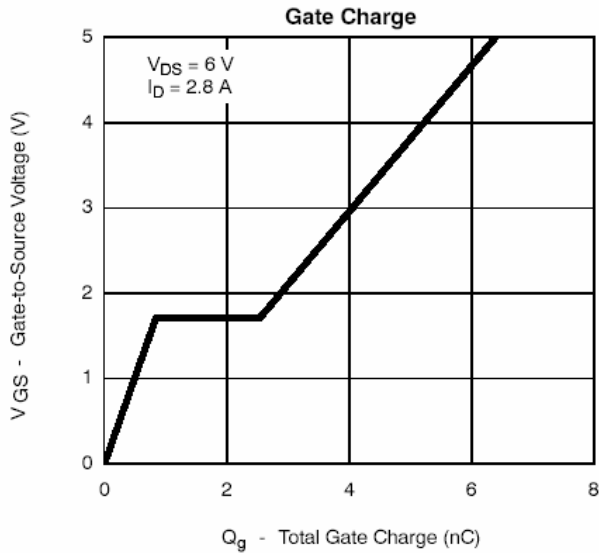
Unless otherwise specified, $T_J = 25^{\circ}\text{C}$.

		CMT2301			
Characteristic	Symbol	Min	Typ	Max	Units
Static					
Drain-Source Breakdown Voltage (V _{GS} = 0 V, I _D = -250 μA)	V _{(BR)DSS}	-20			V
Gate Threshold Voltage (V _{DS} = V _{GS} , I _D = -250 μA)	V _{GS(th)}	-0.45		-1.5	V
Gate Leakage Current (V _{DS} =0 V, V _{GS} = ±8 V)	I _{GSS}			±100	nA
Zero Gate Voltage Drain Current (V _{DS} = -20 V, V _{GS} = 0 V) (V _{DS} = -20 V, V _{GS} = 0 V, T _J = 55°C)	I _{DSS}			-1 -10	μA
On-State Drain Current (V _{DS} ≤ -5 V, V _{GS} = -4.5V) (V _{DS} ≤ -5 V, V _{GS} = -2.5V)	I _{D(on)}	-6 -3			A
Drain-Source On-Resistance (V _{GS} = -4.5 V, I _D = -2.8A) (V _{GS} = -2.5 V, I _D = -2.0A)	R _{DS(on)}		0.105 0.145	0.13 0.19	Ω
Forward Transconductance (V _{DS} = -5 V, I _D = -2.8V)	g _{FS}		6.5		S
Diode Forward Voltage (I _S =-1.6A,V _{GS} =0V)	V _{SD}		-0.8	-1.2	V
Dynamic					
Input Capacitance	(V _{DS} = -6 V, V _{GS} =-0V, f = 1.0 MHz)	C _{iss}		415	pF
Output Capacitance		C _{oss}		223	
Reverse Transfer Capacitance		C _{rss}		87	
Turn-On Time	(V _{DD} = -6 V,R _L =6Ω I _D = -1.0 A,V _{GEN} = -4.5 V, R _G = 6Ω)	t _{d(on)}		13	ns
		t _r		36	
Turn-Off Time		t _{d(off)}		42	
		t _f		34	
Total Gate Charge	(V _{DS} = -6 V, I _D = -2.8 A, V _{GS} =-4.5V)	Q _g		5.8	nC
Gate-Source Charge		Q _{gs}		0.85	
Gate-Drain Charge		Q _{gd}		1.7	

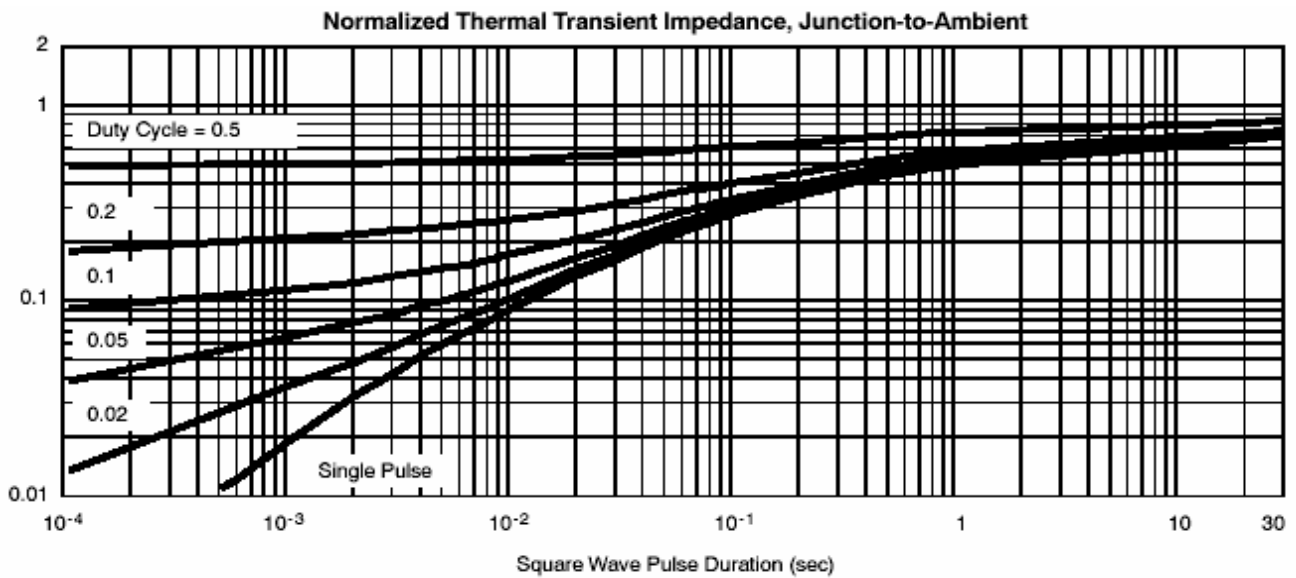
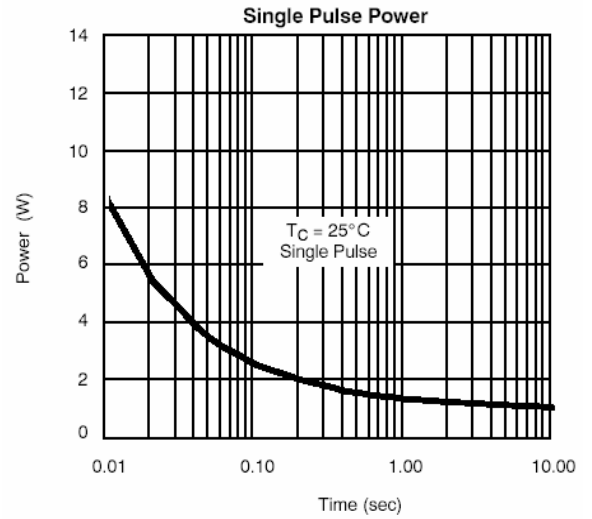
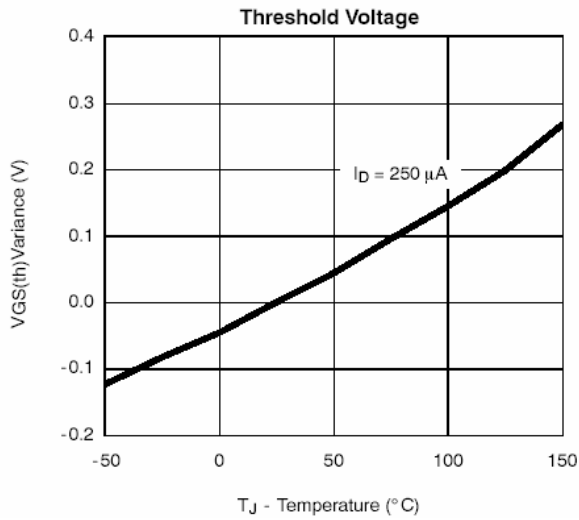
TYPICAL CHARACTERISTICS



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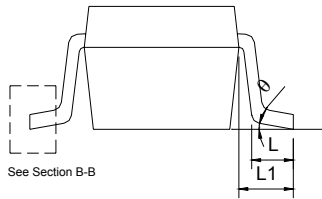
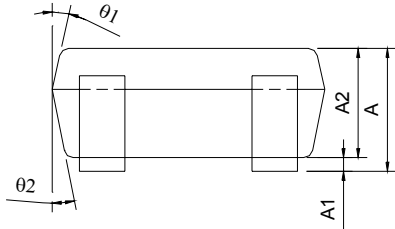
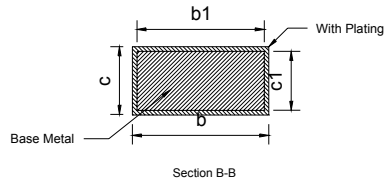
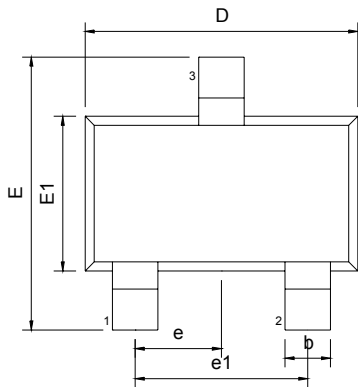


TYPICAL CHARACTERISTICS



PACKAGE DIMENSION

SOT-23-3



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	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°

IMPORTANT NOTICE

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