



CTN2304 N-Channel Enhancement Mode MOSFET

Features

- 30V/2.5A, $R_{DS(ON)} = 117\text{ m}\Omega$ @ $V_{GS} = 10\text{V}$
- 20V/2.4A, $R_{DS(ON)} = 190\text{ m}\Omega$ @ $V_{GS} = 4.5\text{V}$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT -23-3L package design

Applications

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

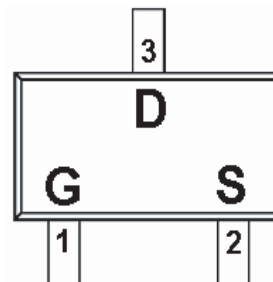
Description

The CTN2304 is the N-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 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.

Pin Configuration (SOT-23-3L)

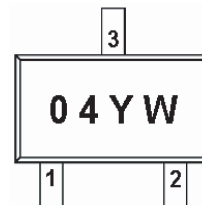


- 1 Gate
- 2 Source
- 3 Drain

Ordering Information

Part Number	Package	Part Marking
CTN2304S23RP	SOT-23-3L	04YW

Note: Suffix "P" means Pb - Free products.



Y : Year Code
W : Week Code

Year Code :

- 4: 2004
- 5: 2005

Week Code :

- A ~ Z (1 ~ 26)
- a ~ z (27 ~ 52)



Absolute Maximum Ratings (TA=25°C Unless otherwise noted)

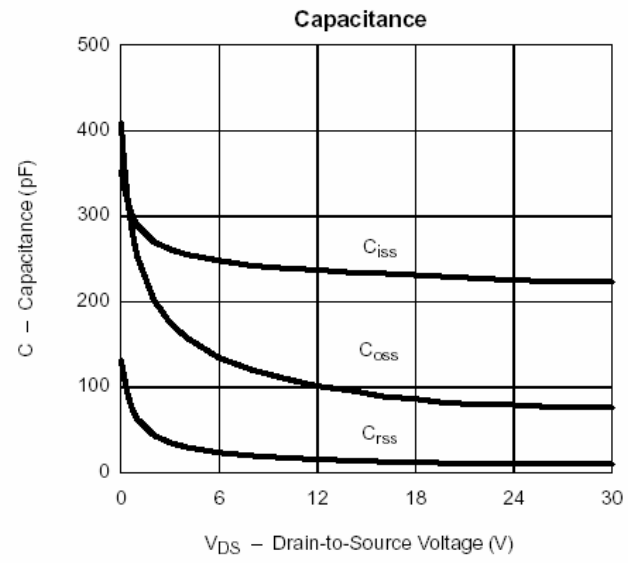
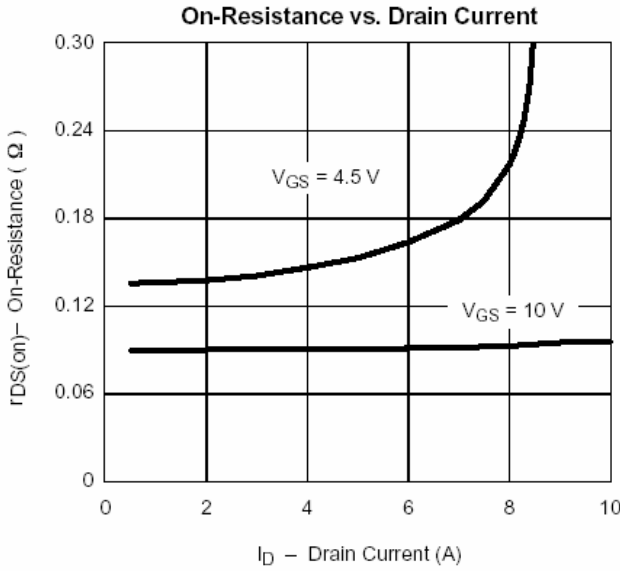
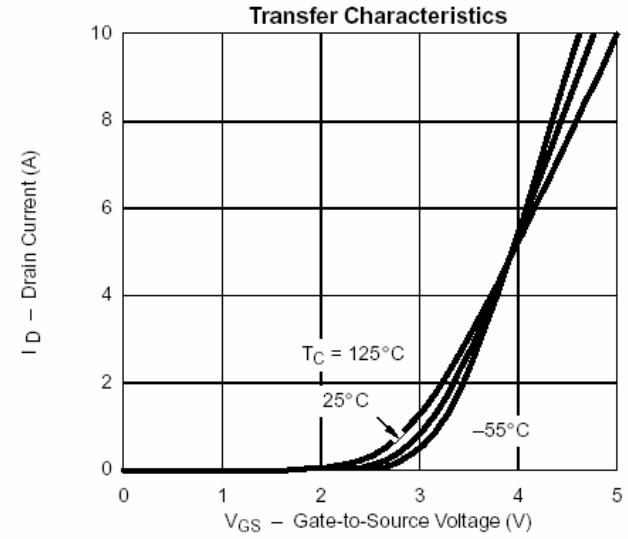
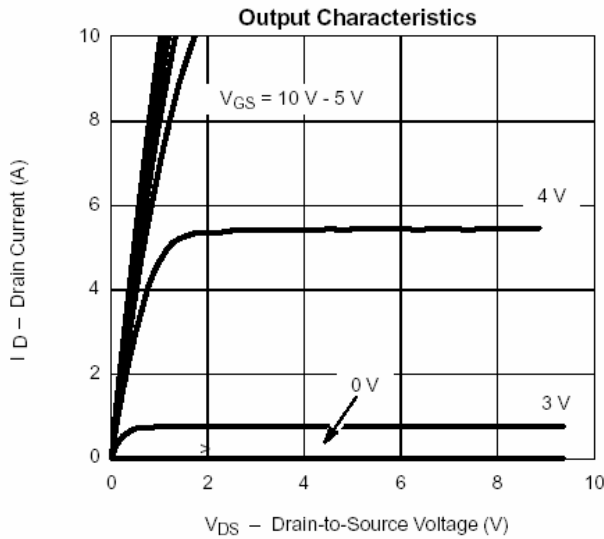
Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V _{DSS}	30	V
Gate-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current(T _J =150°C)	I _D	TA=25°C	2.5
		TA=70°C	2.0
Pulsed Drain Current	I _{DM}	10	A
Continuous Source Current(Diode Conduction)	I _S	1.25	A
Power Dissipation	P _D	TA=25°C	1.25
		TA=70°C	0.8
Operating Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{STG}	-55/150	°C
Thermal Resistance-Junction to Ambient	R _{thJA}	100	°C/W

Electrical Characteristics (TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V _{(BR)DS}	V _{GS} = 0V, I _D = 250uA	30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250uA	1.0		3.0	
Gate Leakage Current	I _{GSS}	V _{DS} = 0V, V _{GS} = ± 20V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30V, V _{GS} = 0V			1	uA
		V _{DS} = 30V, V _{GS} = 0V T _J = 55°C			10	
On-Source Drain Current	I _{D(on)}	V _{DS} ≥ 4.5V, V _{GS} = 10V	6			A
		V _{DS} ≥ 4.5V, V _{GS} = 4.5V	4			
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 2.5A		0.092	0.117	Ohm
		V _{GS} = 4.5V, I _D = 2.0A		0.142	0.190	
Forward Transconductance	g _{fs}	V _{DS} = 4.5V, I _D = 2.5A		4.6		S
Diode Forward Voltage	V _{SD}	I _S = 1.25A, V _{GS} = 0V		0.77	1.2	V
Total Gate Charge	Q _g	V _{DS} = 15V, V _{GS} = 10V I _D ≈ 2.5A		4.5	10	nC
Gate-Source Charge	Q _{gs}			0.8		
Gate-Drain Charge	Q _{gd}			1.0		
Input Capacitance	C _{iss}	V _{DS} = 15V, V _{GS} = 0V f = 1MHz		240		pF
Output Capacitance	C _{oss}			110		
Reverse Transfer Capacitance	C _{rss}			17		
Turn-On Time	t _{d(on)}	V _{DD} = 15V, R _L = 150hm I _D ≈ 1.0A, V _{GEN} = 10V R _G = 60hm		8	20	ns
	t _r			12	30	
Turn-Off Time	t _{d(off)}			17	35	
	t _f			8	20	

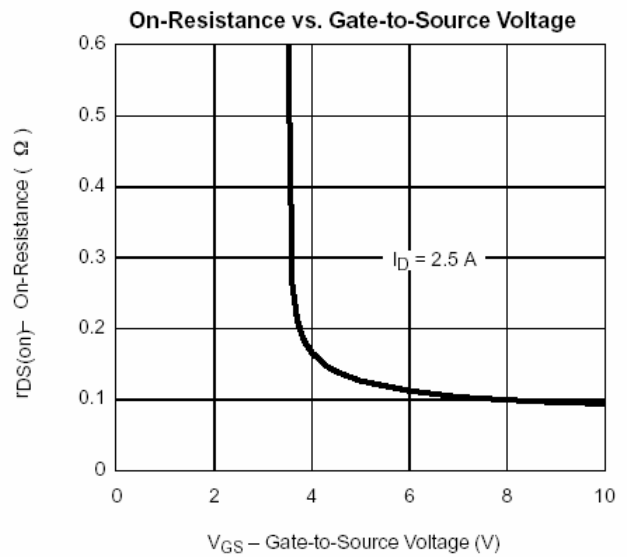
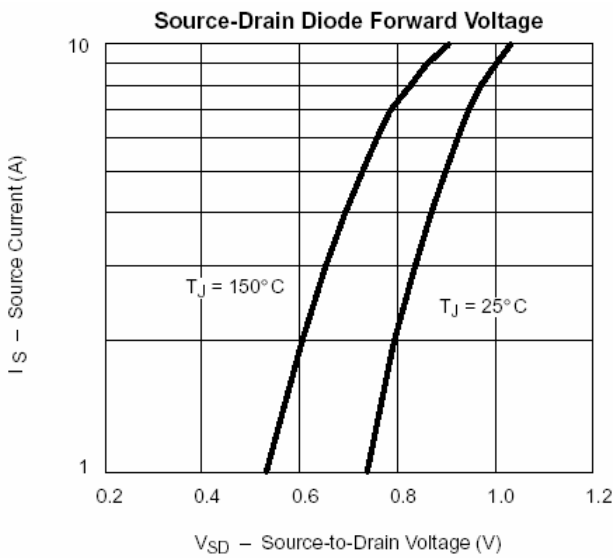
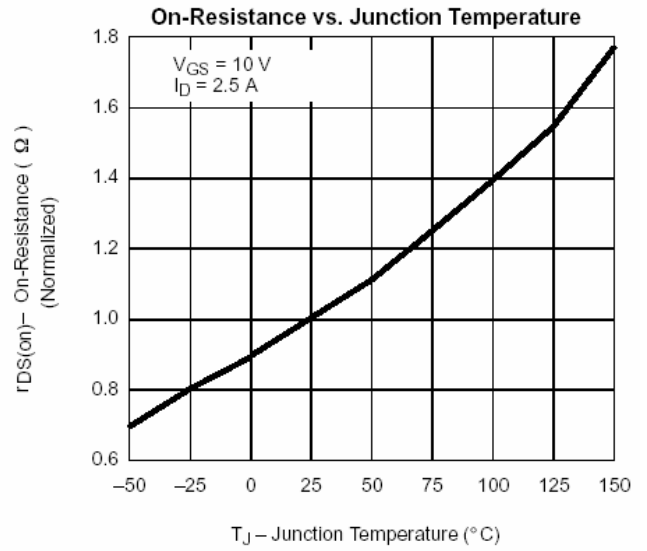
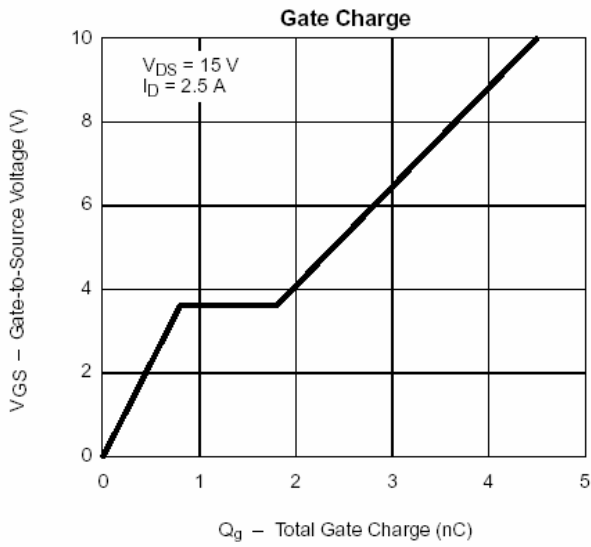


Typical Characteristics Curves



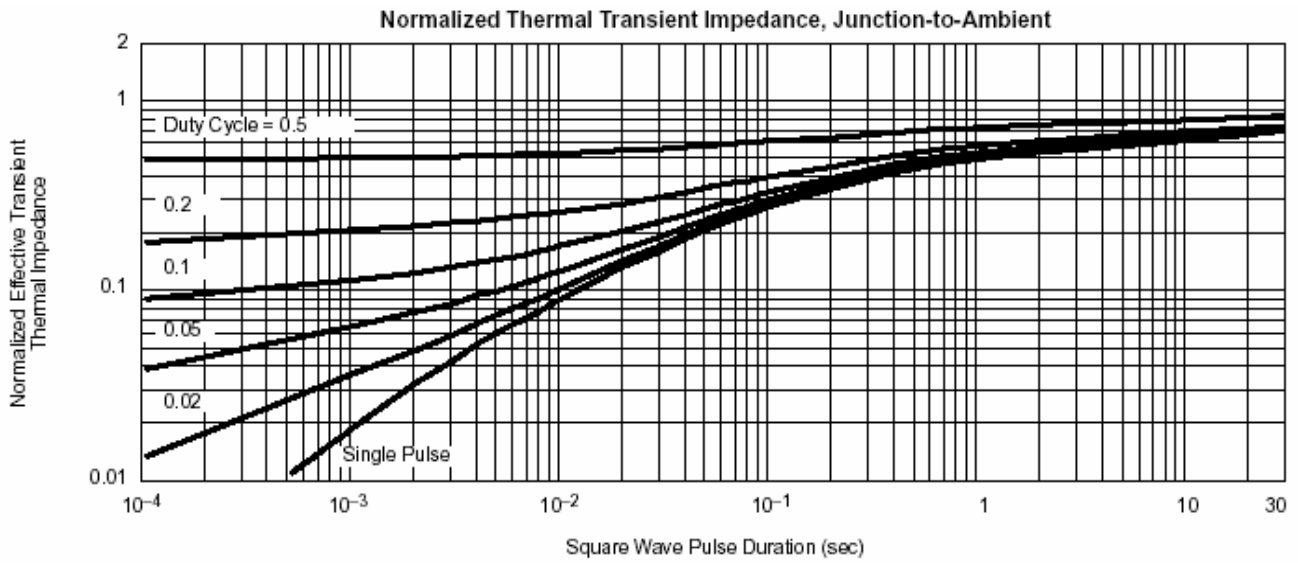
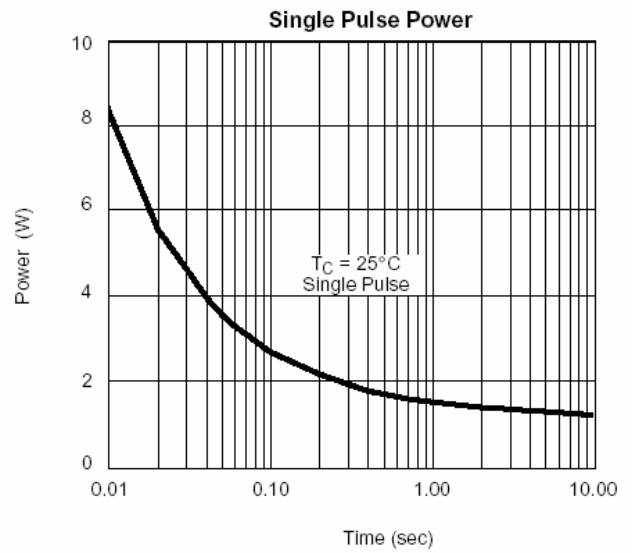
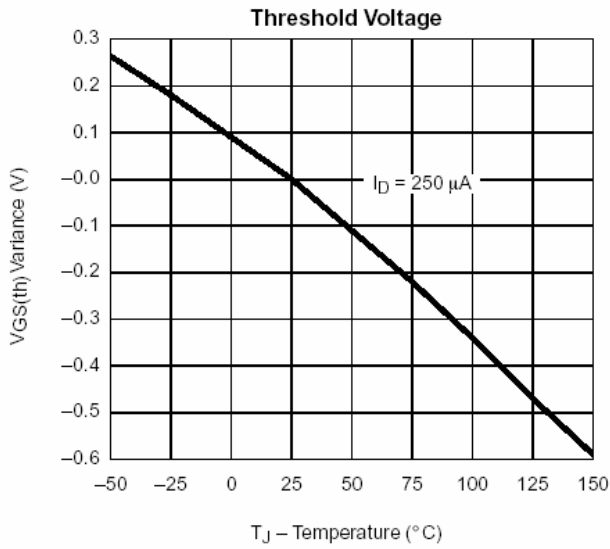


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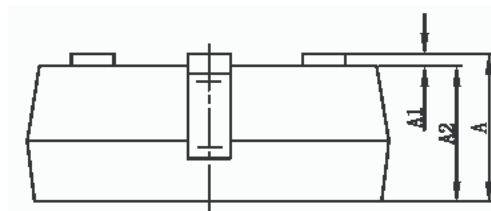
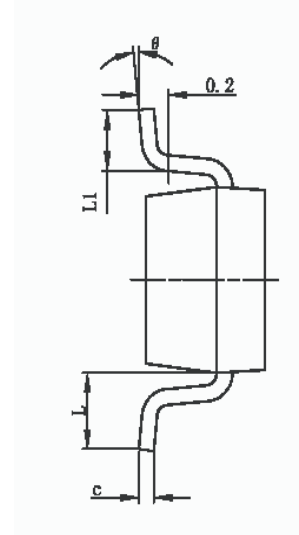
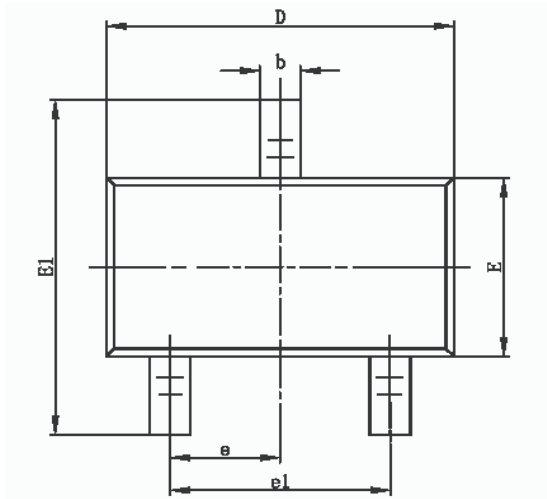


Typical Characteristics Curves





Package Outline



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
B	0.300	0.400	0.012	0.016
C	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.700 REF		0.028 REF	
L1	0.300	0.600	0.012	0.024
theta	0°	8°	0°	8°