N-Channel Enhancement Mode MOSFET

◆ DESCRIPTION

The MT7400 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 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.

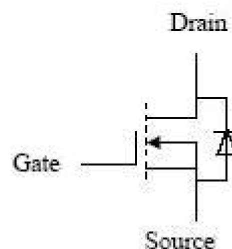
◆ FEATURES

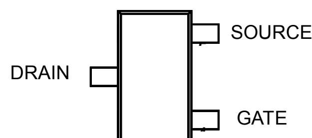
- 30V/2.8A,RDS(ON)= 77mΩ@VGS=10V
- 30V/2.3A,RDS(ON)= 85mΩ@VGS=4.5V
- 30V/1.5A,RDS(ON)= 110mΩ@VGS=2.5V
- Super high density cell design for extremely low RDS (ON)
- Exceptional on-resistance and maximum DC current capability
- SOT-323 (SC–70–3L) package design

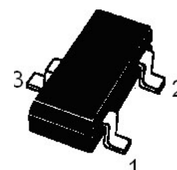
◆ APPLICATIONS

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

◆ PIN CONFIGURATION







◆ ABSOLUTE MAXIMUM RATINGS (Ta=25℃ Unless Otherwise Noted)

SYMBOL	PARAMETER		MAXIMUM	UNITS
V_{DS}	Drain-Source Voltage		30	V
V_{GS}	Gate-Source Voltage		±12	V
I_D	Continuous Drain Current	Tc= 25℃	2.8	A
		Tc= 70℃	2.3	
I_{DM}	Pulsed Drain Current		10	A
I_S	Continuous Source Current (Diode Conduction)		1.25	A
P_D	Power Dissipation	Tc= 25℃	1.25	W
		Tc= 70℃	0.8	
T_J	Operating junction temperature range		150	^{o}C
T_{STG}	Storage temperature range		- 55 to 150	^{o}C

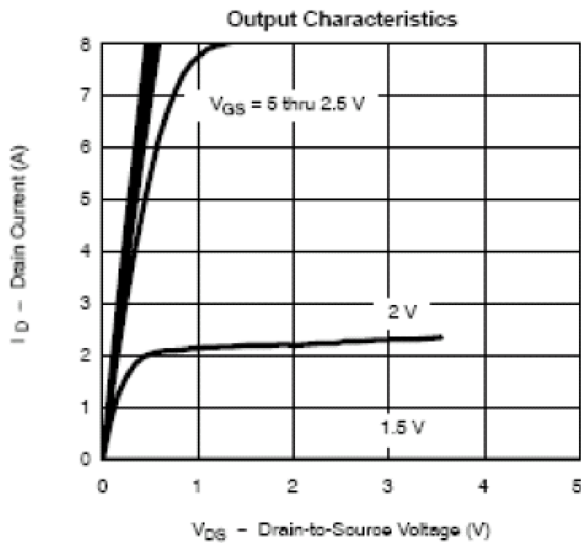
◆ THERMAL RESISTANCE RATINGS

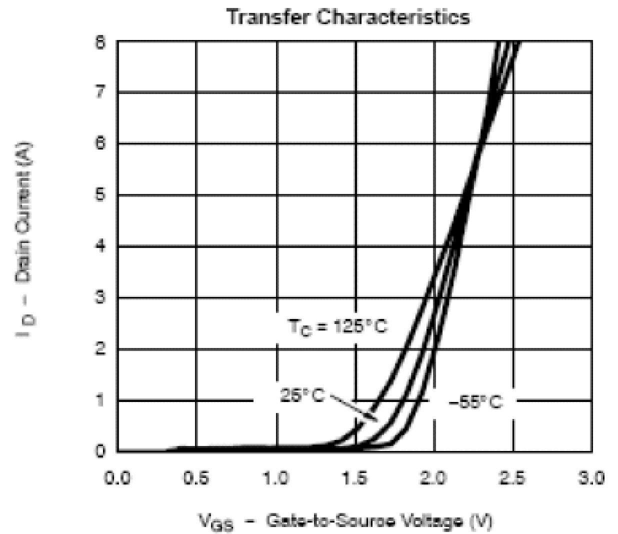
Thermal Resistance	Symbol	Maximum	UNIT
Junction-to-Ambient	$R_{\theta JA}$	100	^{o}C/W

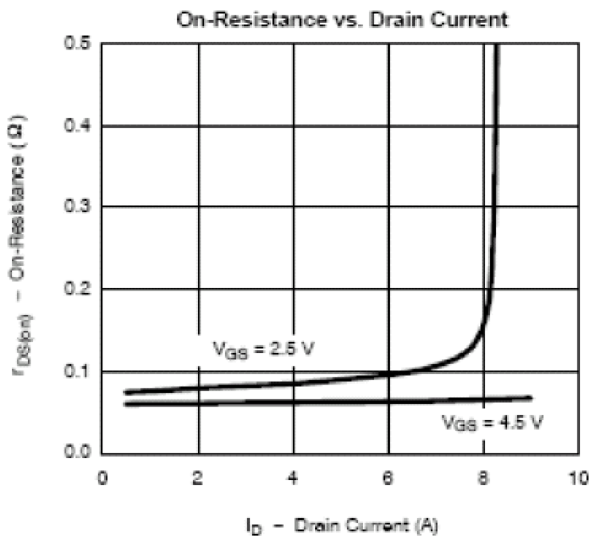
◆ ELECTRICAL CHARACTERISTICS: (Ta= 25℃ Unless Otherwise Noted)

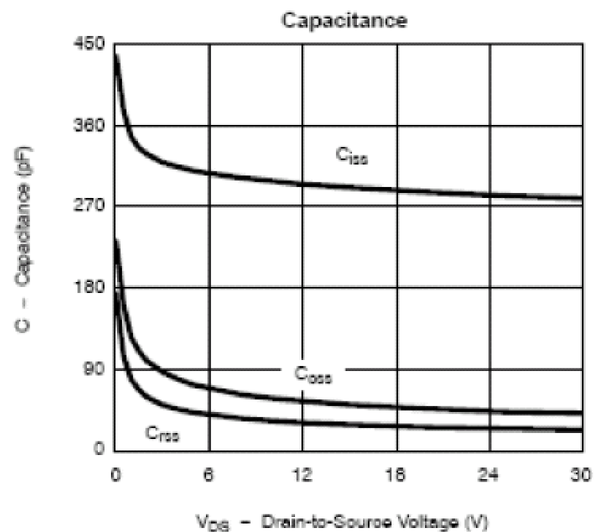
SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Static Parameters						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D=250μA	30			V
$V_{GS(th)}$	Gate Threshcld Voltage	V_{DS} = V_{GS}, I_D=250μA	0.8		1.6	V
I_{GSS}	Gate Leakage Current	V_{DS} = 0V, V_{GS} = ±12 V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 24V, V_{GS} = 0 V			1	μA
		V_{DS} = 24V, V_{GS} = 0 V, T_J=55°C			10	
$I_{D(ON)}$	On-State Drain Current	V_{DS}≧4.5V,V_{GS}=10V	6			A
		V_{DS}≧4.5V,V_{GS}=4.5V	4			A
$R_{DS(ON)}$	Drain-Source On-Resistance	V_{GS} = 10V, I_D=2.8A		0.062	0.077	Ω
		V_{GS}= 4.5V, I_D=2.3A		0.070	0.085	
		V_{GS}= 2.5V, I_D=1.5A		0.095	0.110	
g_{fs}	Forward Transconductance	V_{DS}=4.5V,I_D=2.8A		4.6		S
V_{SD}	Diode Forward Voltage	I_S=1.25A,V_{GS}=0V		0.82	1.2	V
Dynamic Parameters						
C_{iss}	Input Cap.	V_{DS}=15V,V_{GS}=0V F=1MHz		350		pF
C_{oss}	Output Cap.			55		
C_{rss}	Reverse Transfer Cap.			41		
Q_g	Total Gate Charge	V_{DS}=15V,V_{GS}=4.5V I_D=2.0A		4.2	6	nC
Q_{gs}	Gate-Source Charge			0.6		
Q_{gd}	Gate-Drain Charge			1.5		
$t_{d(on)}$	Turn-On Time	V_{DD}=15V,R_L=10Ω V_{GEN}=10V,R_G=3Ω		2.5		ns
t_r				2.5		
$T_{d(off)}$	Turn-Off Time			20		
t_f				4		

◆ TYPICAL CHARACTERISTICS









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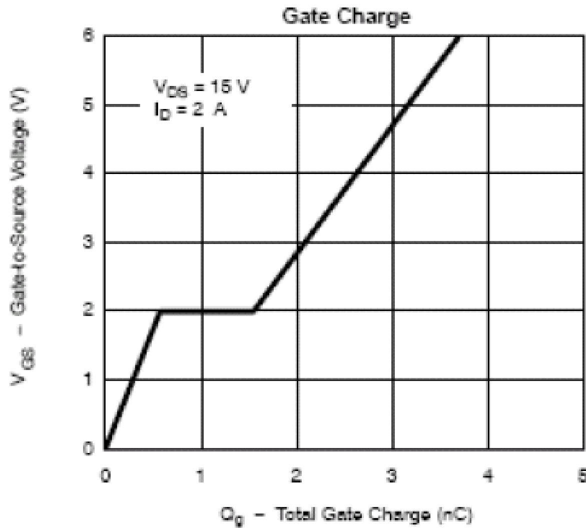

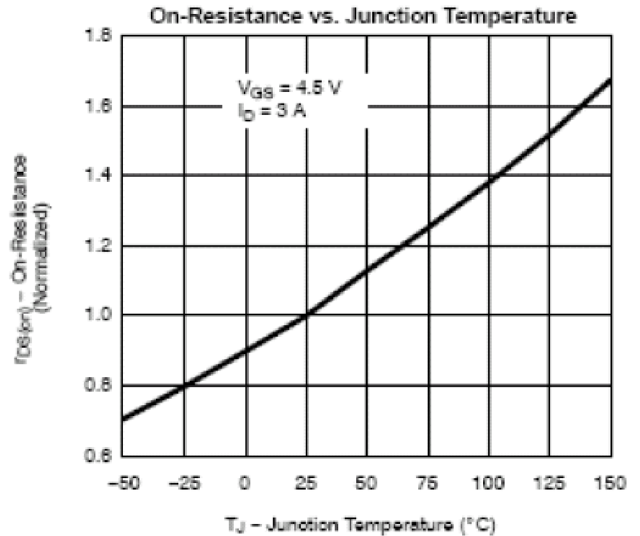

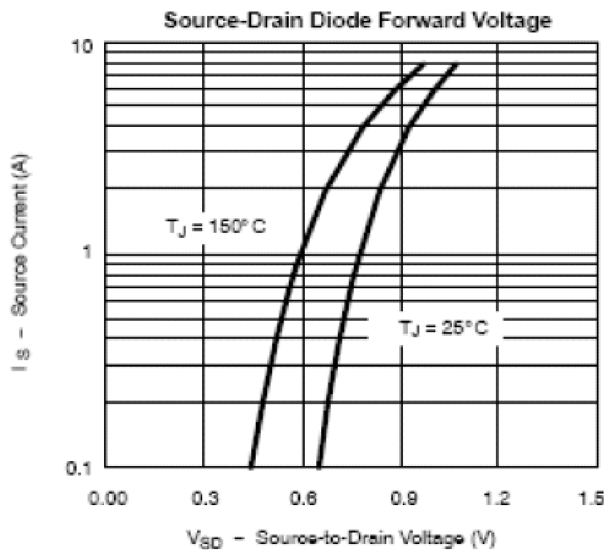

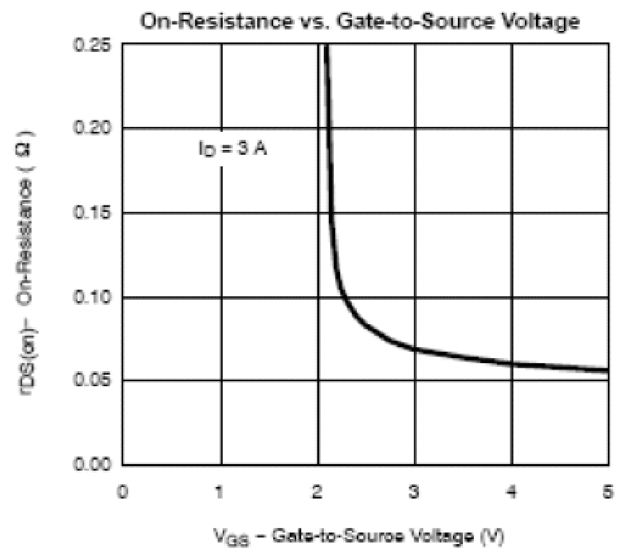

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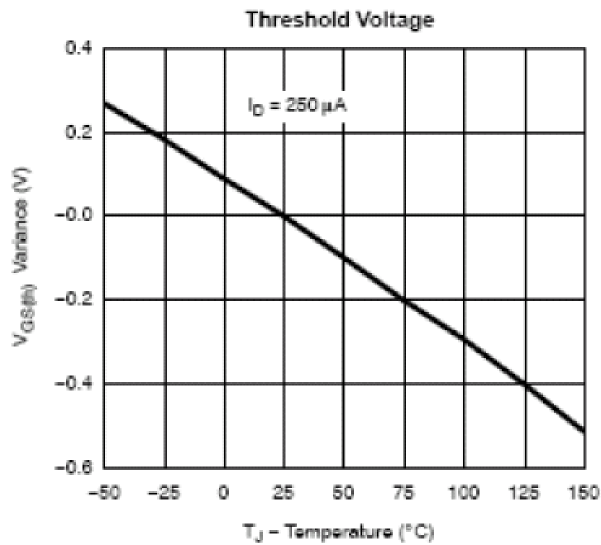
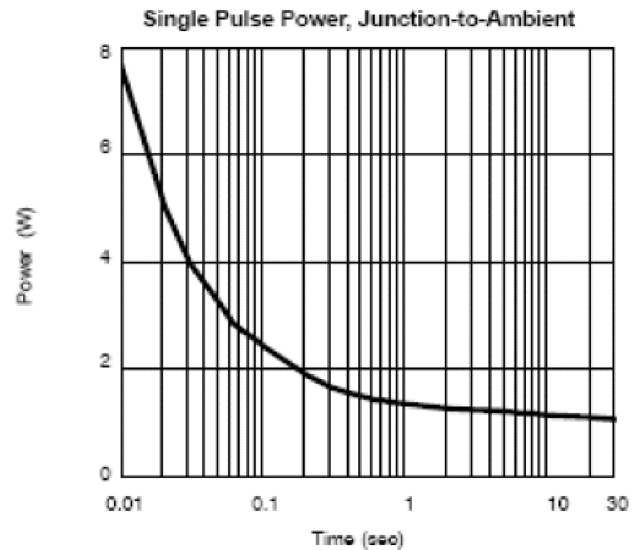
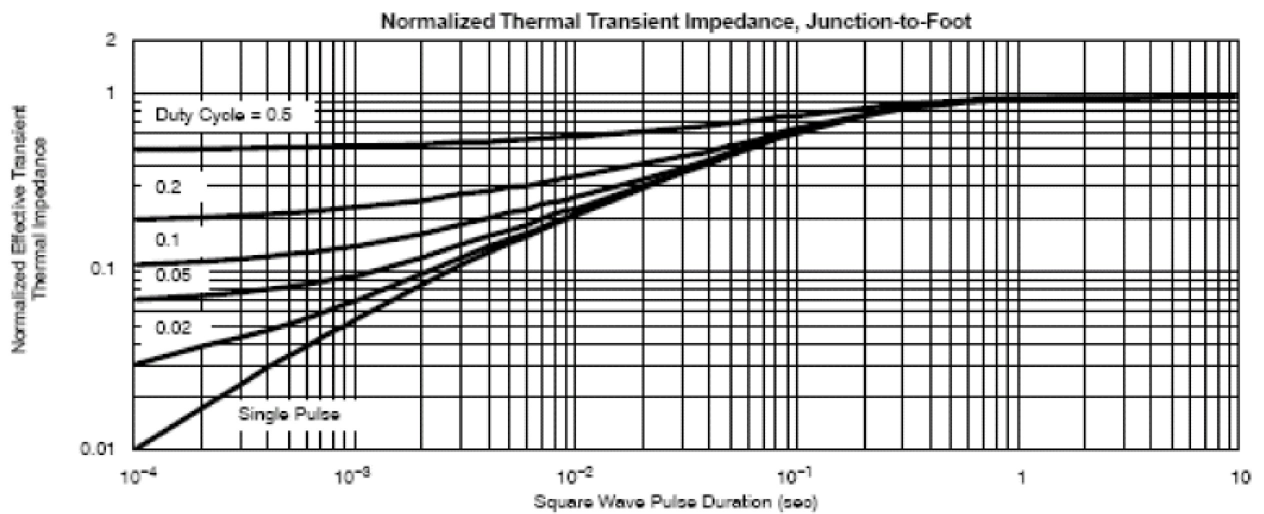
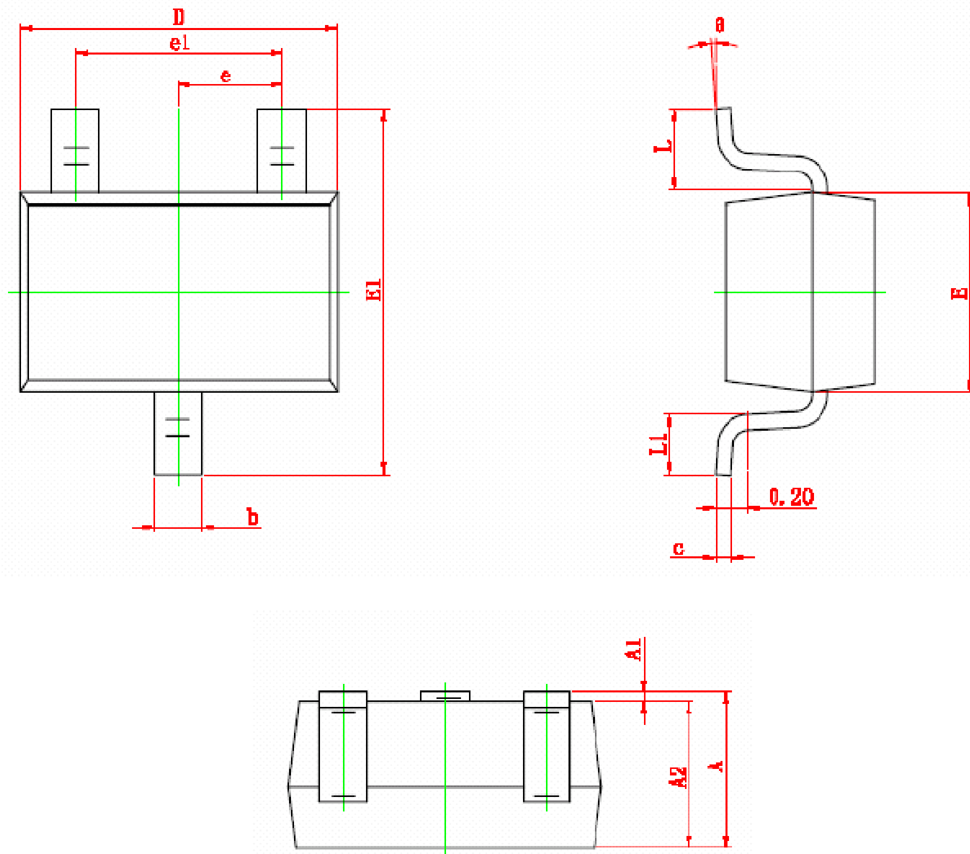






◆ SOT-323 PACKAGE OUTLINE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°