DESCRIPTION

The MT2304 is the N-Channel logic enhancement mode power field effect transistor 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.

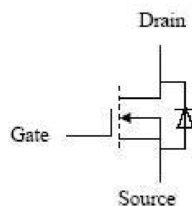
FEATURES

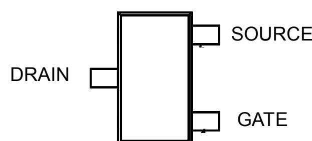
- 30V/3.2A, $R_{DS(ON)}$ = 65mΩ @ V_{GS} = 10V
- 30V/2.0A, $R_{DS(ON)}$ = 90mΩ @ V_{GS} = 4.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23-3L package design

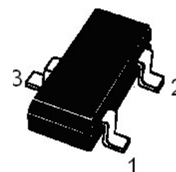
APPLICATIONS

- POWER Management in Note
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC

PIN CONFIGURATION







ABSOLUTE MAXIMUM RATINGS

(T_A=25℃ Unless Otherwise Noted)

Parameter		Symbol	Maximum	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_A = 25℃	I_D	3.2	A
	T_A = 70℃		2.6	
Pulsed Drain Current		I_{DM}	10	A
Continuous Source Current (Diode Conduction)		I_S	1.25	A
Power Dissipation	T_A = 25℃	P_D	1.25	W
	T_A = 70℃		0.8	
Operating junction temperature range		T_J	150	^oC
Storage temperature range		T_{STG}	- 55 to 150	^oC

THERMAL RESISTANCE RATINGS

Thermal Resistance	Symbol	Maximum	Unit
Junction-to-Ambient	$R\theta_{JA}$	100	$^oC/W$

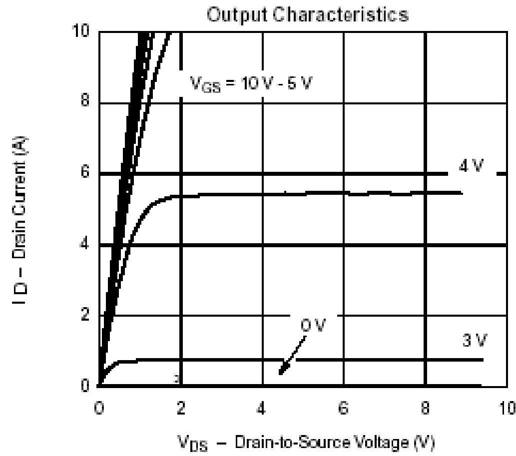
◆ ELECTRICAL CHARACTERISTICS

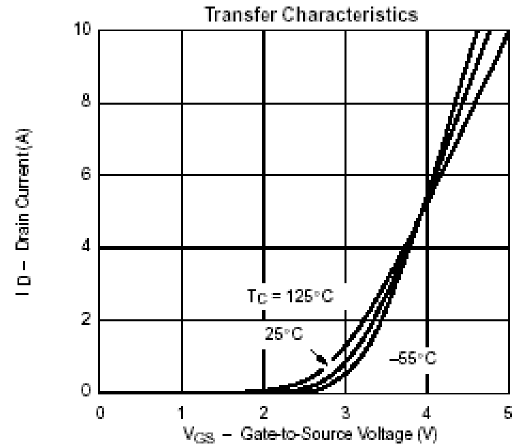
(T_A=25℃ Unless Otherwise Noted)

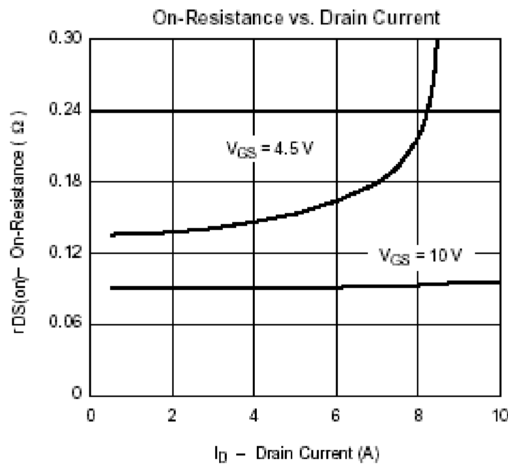
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Parameters						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	30	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS} = V_{DS}, I_D = 250μA	1.0	-	3.0	V
Gate Current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 30V, V_{GS} = 1.0 V	-	-	1	μA
		V_{DS} = 30V, V_{GS} = 0V, T_J = 55°C	-	-	10	
Forward Trans conductance	g_{fs}	V_{DS} = 4.5V, I_D = 2.5A	-	4.6	-	S
On-State 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	-	50	65	mΩ
		V_{GS} = 4.5V, I_D = 2.0A	-	65	90	
Diode Forward Voltage	V_{SD}	I_S =1.25A,V_{GS} = 0V	-	0.82	1.2	V
Dynamic Parameters						
Input Cap.	C_{iss}	V_{DS} = 10V, V_{GS} = 0V, F = 1MHz	-	240	-	pF
Output Cap.	C_{oss}		-	110	-	
Reverse Transfer Cap.	C_{rss}		-	17	-	
Total Gate Charge	Q_g	V_{DS} = 15V, V_{GS} = 4.5V, I_D = 2.5A	-	4.5	10	nC
Gate-Source Charge	Q_{gs}		-	0.8	-	
Gate-Drain Charge	Q_{gd}		-	1.0	-	
Turn-On Time	$T_{D(ON)}$	V_{DD}= 15V, R_L = 15Ω, I_D = 1A, V_{GEN} = 10V, R_G = 6Ω	-	8	20	nS
	t_r		-	12	30	
Turn-Off Time	$T_{D(OFF)}$		-	17	35	
	t_f		-	8	20	

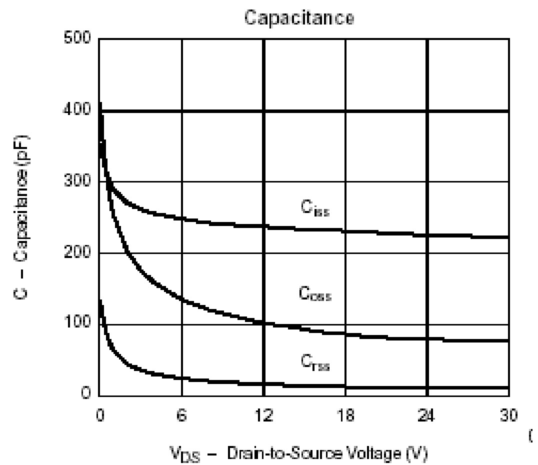
◆ TYPICAL CHARACTERICTICS

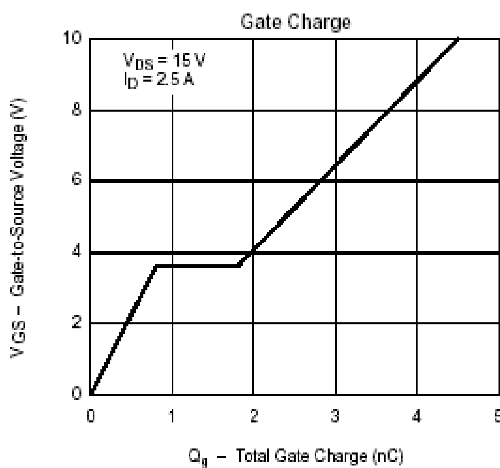
(25℃ Unless Noted)

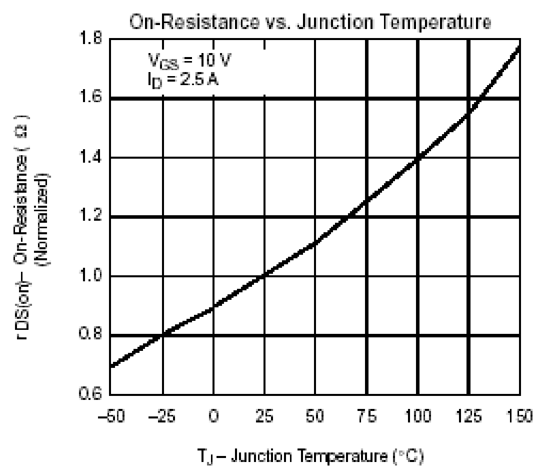






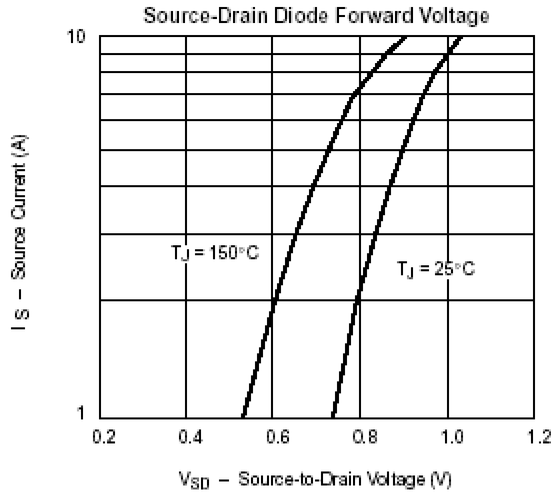


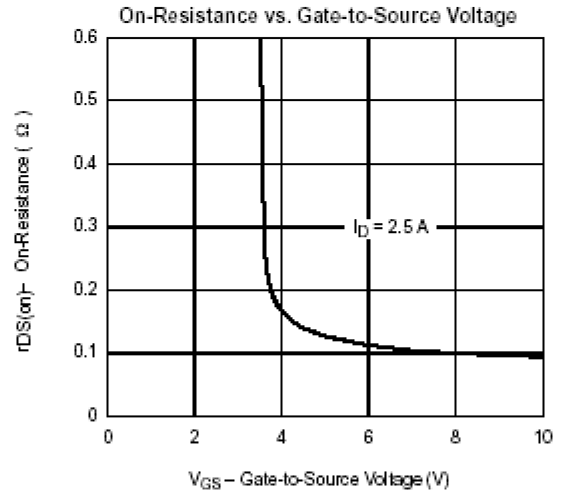


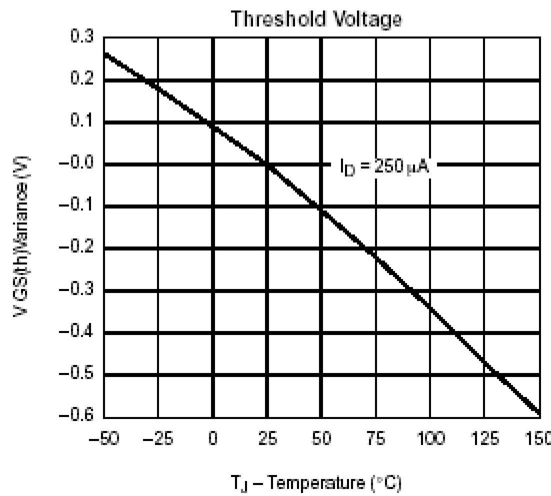


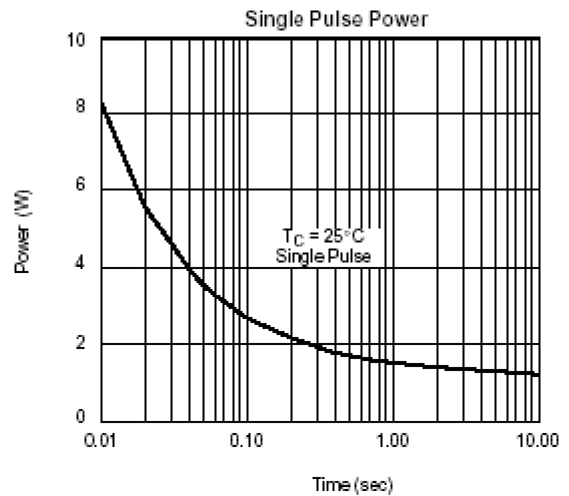
◆ TYPICAL CHARACTERICTICS

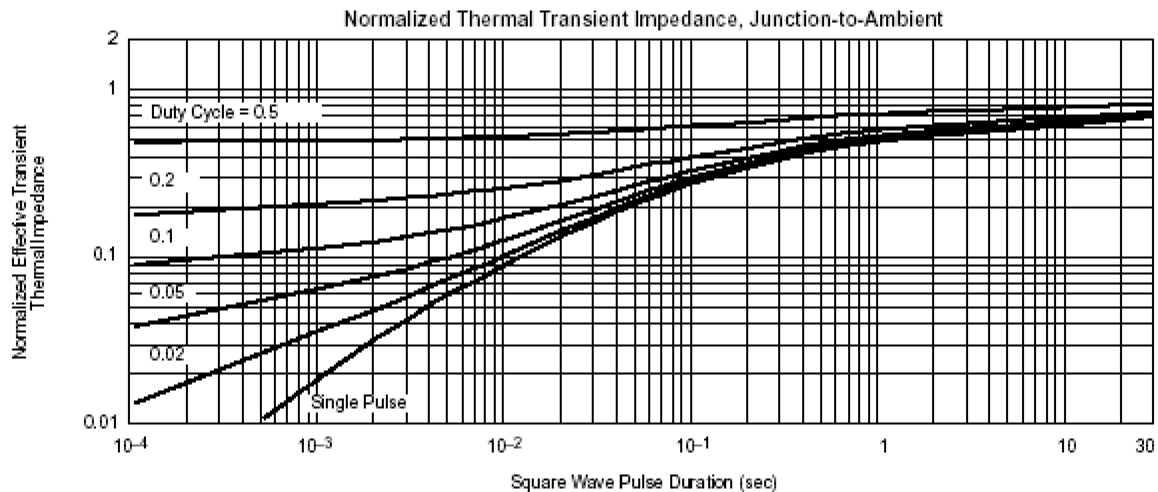
(25℃ Unless Noted)





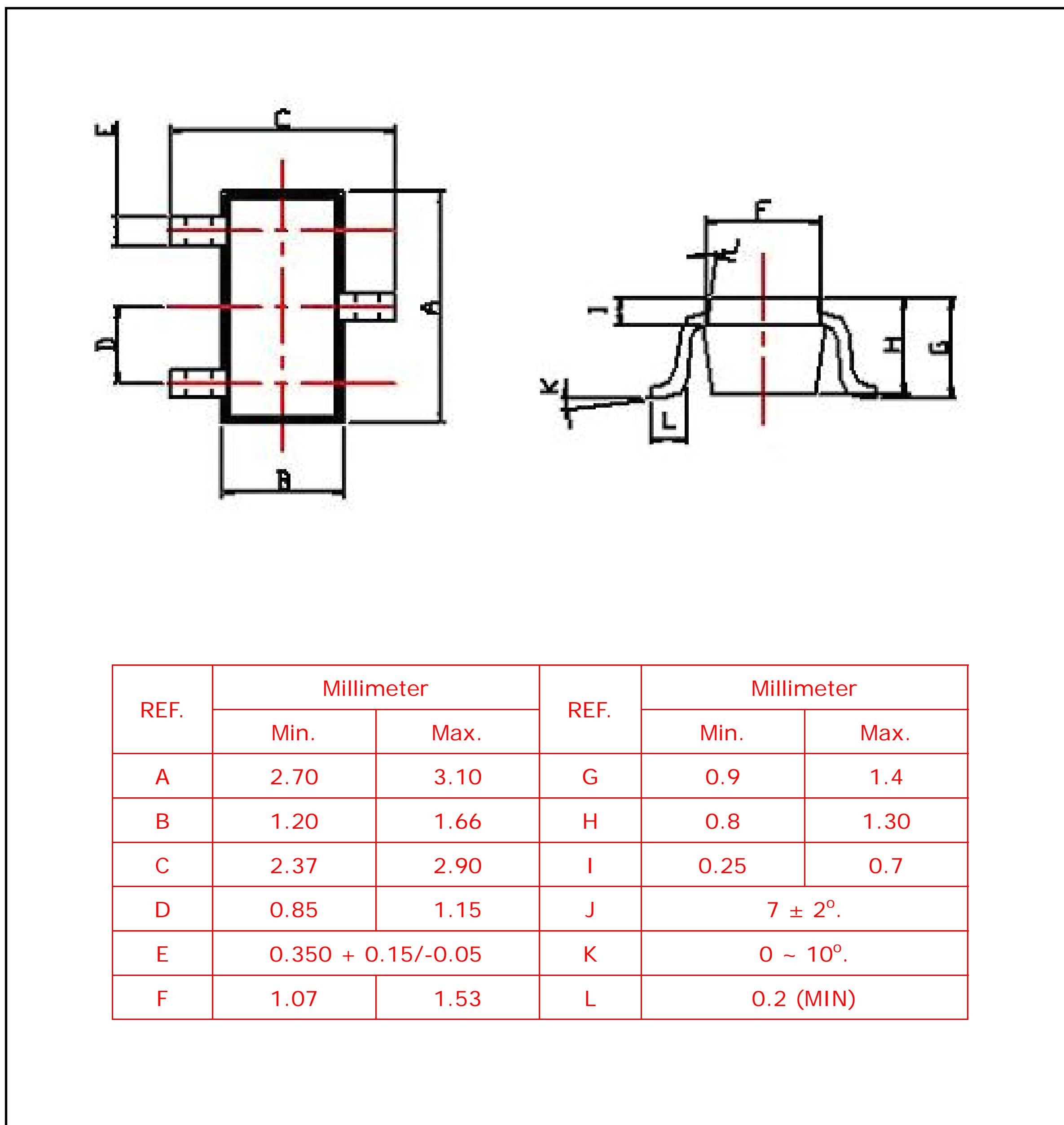






◆ PHYSICAL DIMENSIONS

3-Pin surface Mount SOT-23



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0.9	1.4
B	1.20	1.66	H	0.8	1.30
C	2.37	2.90	I	0.25	0.7
D	0.85	1.15	J	7 ± 2°.	
E	0.350 + 0.15/-0.05		K	0 ~ 10°.	
F	1.07	1.53	L	0.2 (MIN)	