

N-Channel Enhancement Mode MOSFET
◆ DESCRIPTION

The MT2302 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.

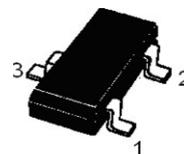
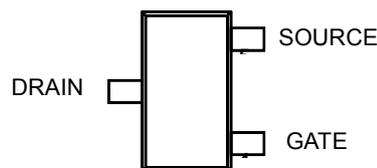
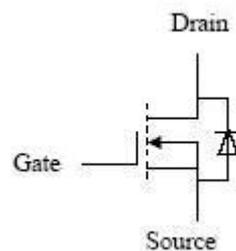
These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits, and low in-line power loss are needed in a very small outline surface mount package.

◆ FEATURES

- 20V/3.6A, $R_{DS(ON)} = 80 \text{ m}\Omega @ V_{GS} = 4.5\text{V}$
- 20V/3.1A, $R_{DS(ON)} = 95 \text{ m}\Omega @ V_{GS} = 2.5\text{V}$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23-3L package design

◆ APPLICATIONS

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

◆ PIN CONFIGURATION


N-Channel Enhancement Mode MOSFET
◆ ABSOLUTE MAXIMUM RATINGS

 (T_A=25°C Unless Otherwise Noted)

Parameter	Symbol	Maximum	Unit
Drain-Source Voltage	V _{DS}	20	V
Gate-Source Voltage	V _{GS}	12	V
Continuous Drain Current	I _D	T _A = 25°C	2.8
		T _A = 70°C	2.2
Pulsed Drain Current	I _{DM}	10	A
Continuous Source Current (Diode Conduction)	I _S	1.6	A
Power Dissipation	P _D	T _A = 25°C	1.25
		T _A = 70°C	0.8
Operating junction temperature range	T _J	150	°C
Storage temperature range	T _{STG}	- 55 to 150	°C
Lead temperature(1/16" from case 10 sec)	T _{LEAD}	275	°C

◆ THERMAL RESISTANCE RATINGS

Parameter	Symbol	Maximum	Unit
Junction-to-Ambient	R _{θJA}	100	°C/W

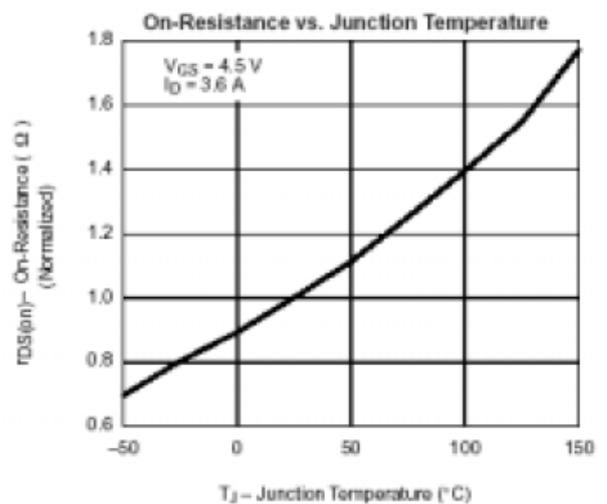
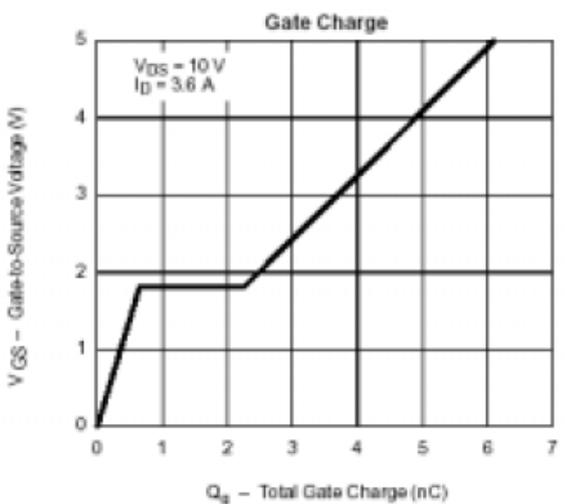
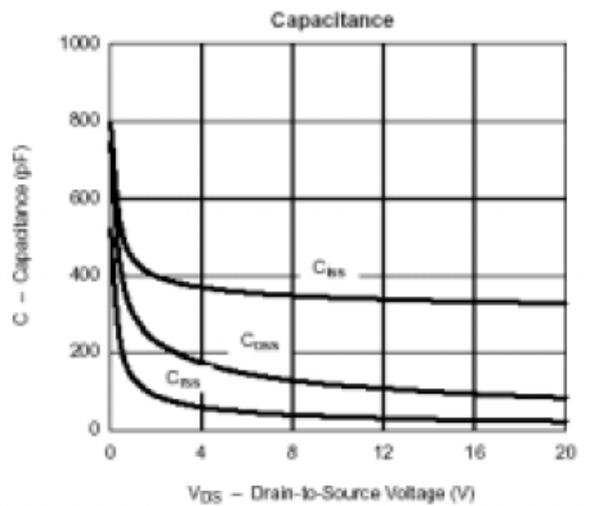
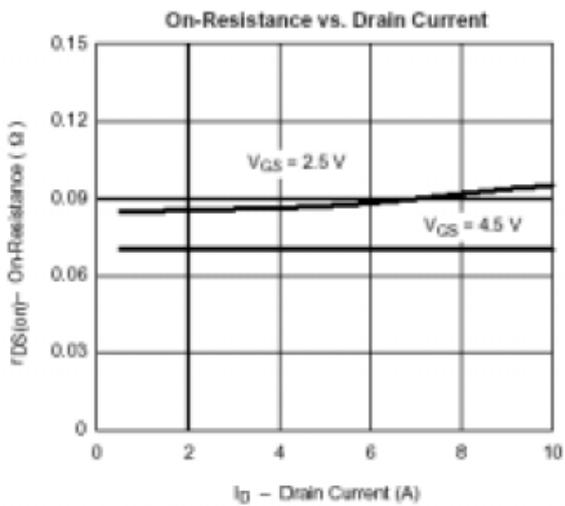
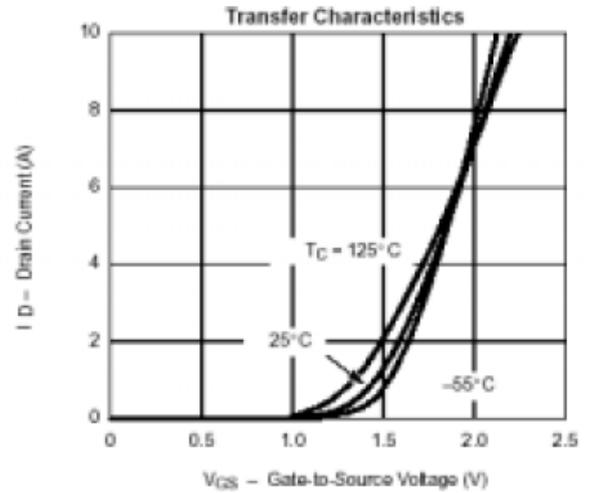
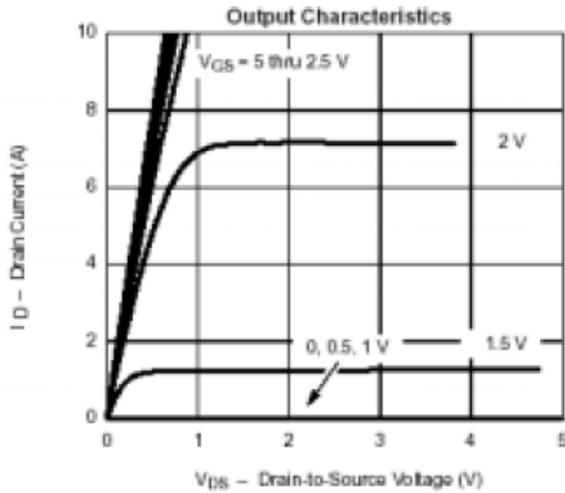
◆ ORDERING INFORMATION

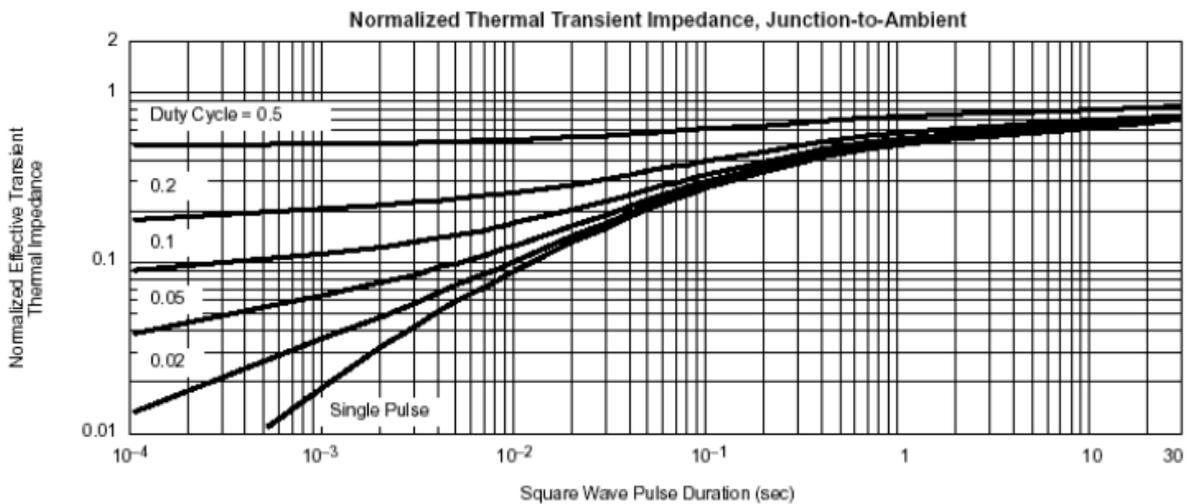
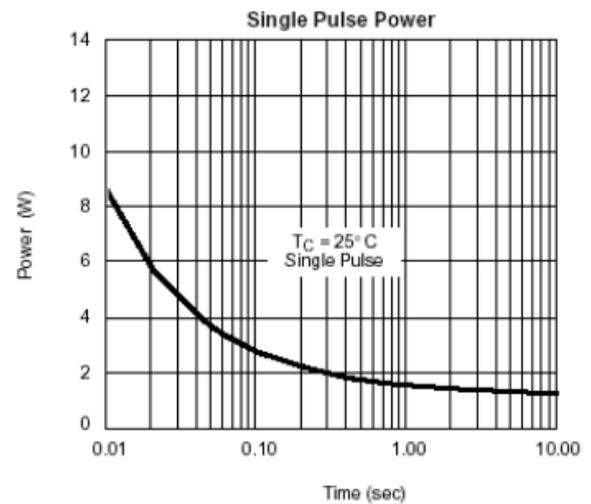
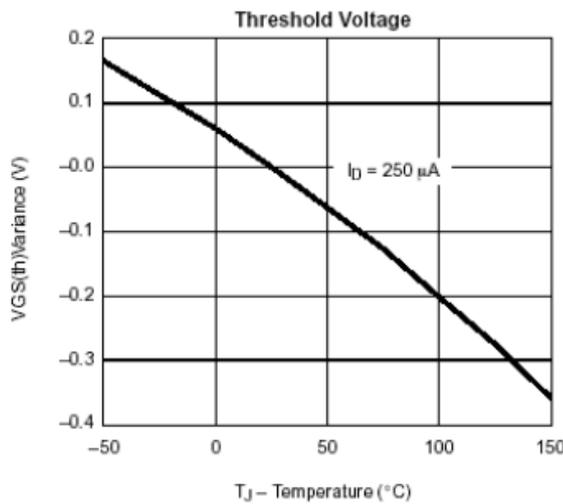
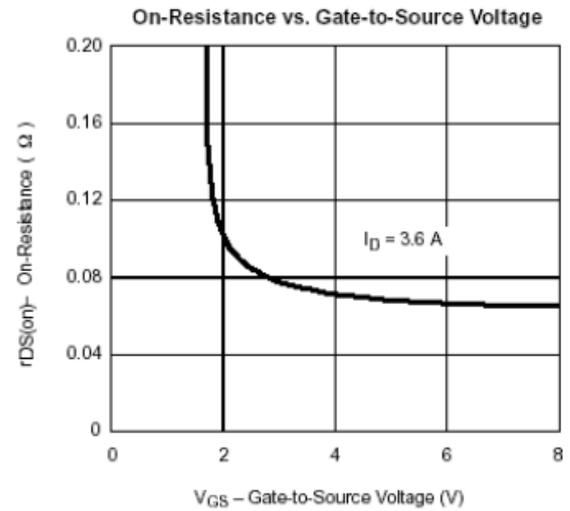
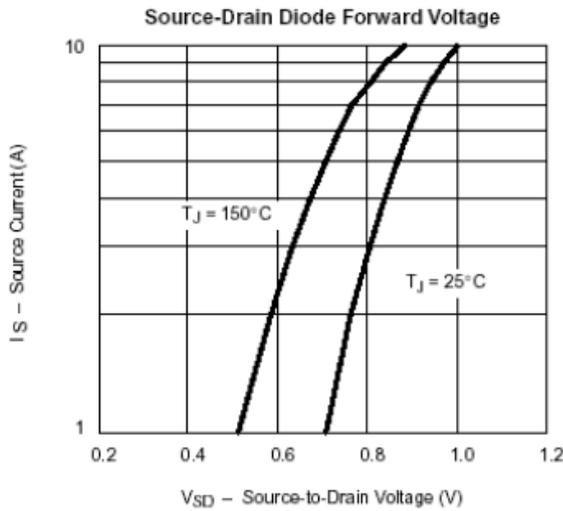
Device	Package	Shipping
MT2302	SOT-23	3000 PCS / Tape & Reel

N-Channel Enhancement Mode MOSFET
◆ ELECTRICAL CHARACTERISTICS

(TA=25°C Unless Otherwise Noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Parameters						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 10\mu A$	20	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS} = V_{DS}, I_D = 50\mu A$	0.45	-	1.2	V
Gate Leakage Current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 8V$	-	-	± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 20V, V_{GS} = 0V$	-	-	1	μA
		$V_{DS} = 20V, V_{GS} = 0V, T_J = 55^\circ C$	-	-	10	
Forward Trans conductance	g_{fs}	$V_{DS} = 5V, I_D = 3.6A$	-	10	-	S
On-State Drain Current	$I_{D(ON)}$	$V_{DS} \geq 5V, V_{GS} = 4.5V$	6	-	-	A
		$V_{DS} \geq 5V, V_{GS} = 2.5V$	4	-	-	
Drain-Source On Resistance	$R_{DS(ON)}$	$V_{GS} = 2.5V, I_D = 3.1A$	-	70	95	m Ω
		$V_{GS} = 4.5V, I_D = 3.6A$	-	50	80	
Diode Forward Voltage	V_{SD}	$I_S = 1.6A, V_{GS} = 0V$	-	0.85	1.2	V
Dynamic Parameters						
Input Cap.	C_{iss}	$V_{DS} = 10V, V_{GS} = 0V,$ $F = 1MHz$	-	340	-	pF
Output Cap.	C_{oss}		-	115	-	
Reverse Transfer Cap.	C_{rss}		-	33	-	
Total Gate Charge	Q_g	$V_{DS} = 10V, V_{GS} = 4.5V,$ $I_D = -3.6A$	-	5.4	10	nC
Gate-Source Charge	Q_{gs}		-	0.65	-	
Gate-Drain Charge	Q_{gd}		-	1.4	-	
Turn-On Time	$T_{D(ON)}$	$V_{DS} = 10V, R_L = 5.5\Omega, I_D = 3.6A,$ $V_{GEN} = 4.5V, R_G = 6\Omega$	-	12	25	nS
	t_r		-	36	60	
Turn-Off Time	$T_{D(OFF)}$		-	34	60	
	t_f		-	10	25	

N-Channel Enhancement Mode MOSFET
◆ TYPICAL CHARACTERISTICS


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N-Channel Enhancement Mode MOSFET
◆ PHYSICAL DIMENSIONS
3-Pin surface Mount SOT-23
