

**P- Channel Enhancement Mode MOSFET**
**◆ DESCRIPTION**

The MT2307 is the P-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.

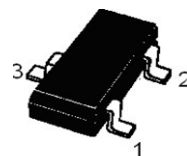
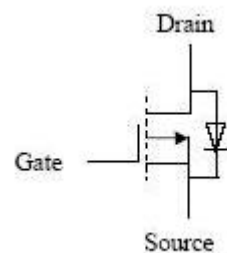
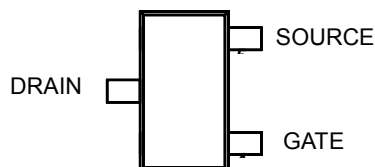
These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits, and low in-line power loss are needed in a very small outline surface mount package.

**◆ FEATURES**

- -10V/-3.5A,  $R_{DS(ON)} = 50m\Omega @ V_{GS} = -4.5V$
- -10V/-3.0A,  $R_{DS(ON)} = 70m\Omega @ V_{GS} = -2.5V$
- -10V/-2.0A,  $R_{DS(ON)} = 105m\Omega @ V_{GS} = -1.8V$
- 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**


**P- Channel Enhancement Mode MOSFET**
**◆ ABSOLUTE MAXIMUM RATINGS**

 (T<sub>A</sub>=25°C Unless Otherwise Noted)

Parameter		Symbol	Maximum	Unit
Drain-Source Voltage		V <sub>DS</sub>	-10	V
Gate-Source Voltage		V <sub>GS</sub>	±12	V
Continuous Drain Current	T <sub>A</sub> = 25°C	I <sub>D</sub>	-3.5	A
	T <sub>A</sub> = 70°C		-2.8	
Pulsed Drain Current		I <sub>DM</sub>	-10	A
Continuous Source Current (Diode Conduction)		I <sub>S</sub>	-1.6	A
Power Dissipation	T <sub>A</sub> = 25°C	P <sub>D</sub>	1.25	W
	T <sub>A</sub> = 70°C		0.8	
Operating junction temperature range		T <sub>J</sub>	150	°C
Storage temperature range		T <sub>STG</sub>	- 55 to 150	°C

**◆ THERMAL RESISTANCE RATINGS**

Thermal Resistance	Symbol	Maximum	Unit
Junction-to-Ambient	Rθ <sub>JA</sub>	100	°C/W

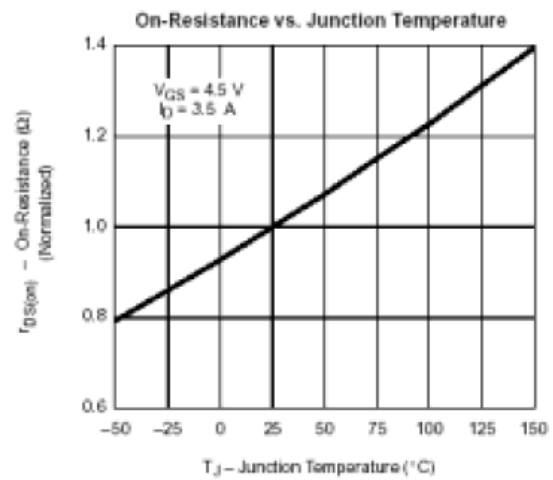
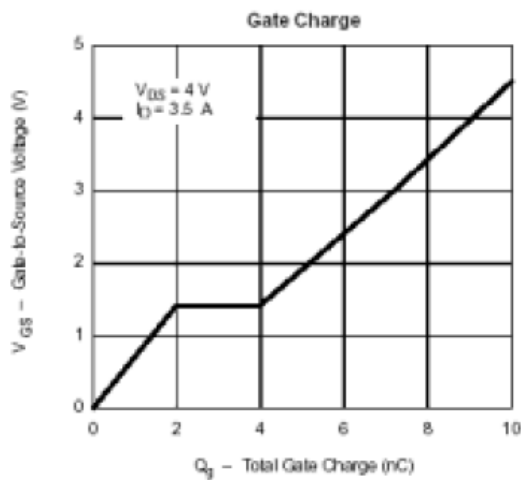
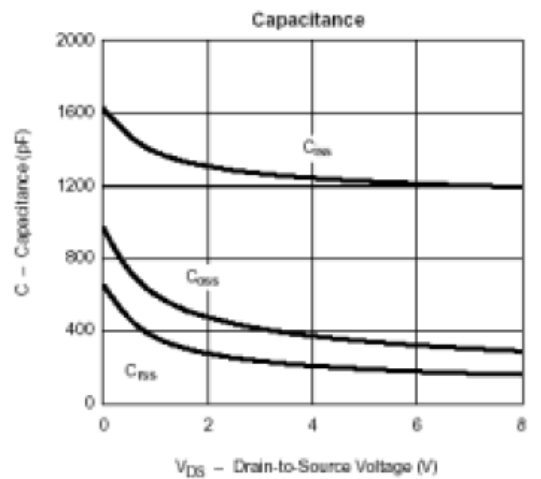
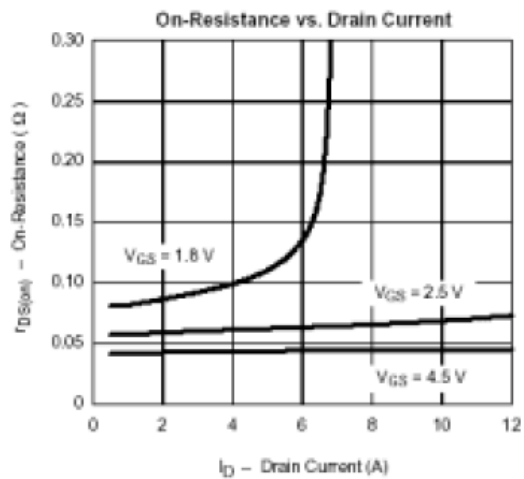
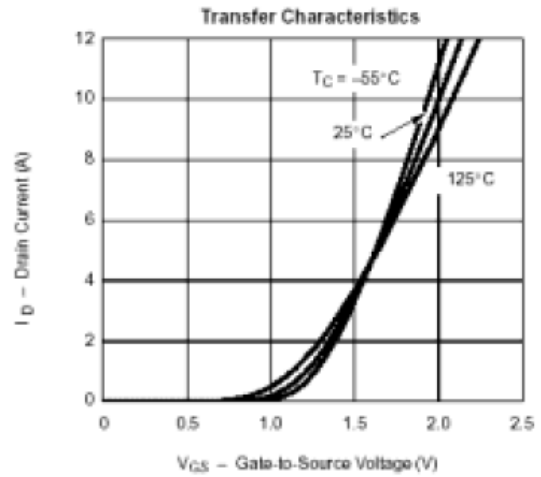
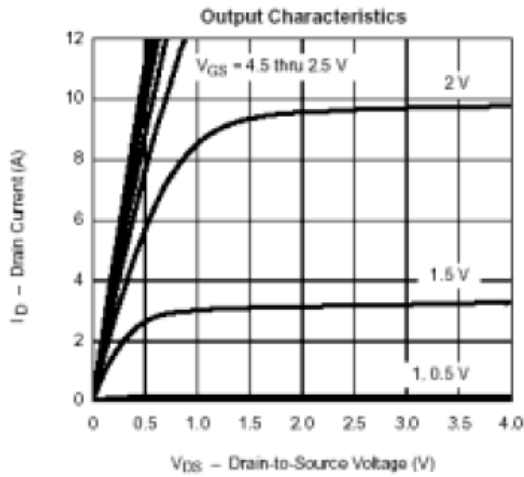
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**◆ ELECTRICAL CHARACTERISTICS**

 (T<sub>A</sub>=25 °C Unless Otherwise Noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
<b>Static Parameters</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-10	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>GS</sub> = V <sub>DS</sub> , I <sub>D</sub> = -250μA	-0.45	-	-1.5	V
Gate Current	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ± 12 V	-	-	100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -20V, V <sub>GS</sub> = 0 V	-	-	-1	μA
		V <sub>DS</sub> = -20V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 55 °C	-	-	-10	
On-State Drain Current	I <sub>D(ON)</sub>	V <sub>DS</sub> ≤ -5V, V <sub>GS</sub> = -4.5V	-6	-	-	A
		V <sub>DS</sub> ≤ -5V, V <sub>GS</sub> = -2.5V	-3	-	-	
Drain-Source On Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -3.5A	-	45	50	mΩ
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -2.0A	-	55	70	
		V <sub>GS</sub> = -1.8V, I <sub>D</sub> = -2.0A	-	90	105	
Forward Trans conductance	g <sub>fs</sub>	V <sub>DS</sub> = -5V, I <sub>D</sub> = -3.5A	-	8.5	-	S
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> = -1.6A, V <sub>GS</sub> = 0V	-	-0.8	-1.2	V
<b>Dynamic Parameters</b>						
Input Cap.	C <sub>iss</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = 0V f = 1MHz	-	1200	-	pF
Output Cap.	C <sub>oss</sub>		-	300	-	
Reverse Transfer Cap.	C <sub>rss</sub>		-	210	-	
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = -4.5V I <sub>D</sub> = -3.5A	-	10	12	nC
Gate-Source Charge	Q <sub>gs</sub>		-	2	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	2	-	
Turn-On Time	T <sub>d(on)</sub>	V <sub>DD</sub> = -10V, R <sub>L</sub> = 6Ω I <sub>D</sub> = -1A, V <sub>GEN</sub> = -4.5V, R <sub>G</sub> = 6Ω	-	13	25	nS
	T <sub>r</sub>		-	20	35	
Turn-Off Time	T <sub>d(off)</sub>		-	42	70	
	T <sub>f</sub>		-	20	35	

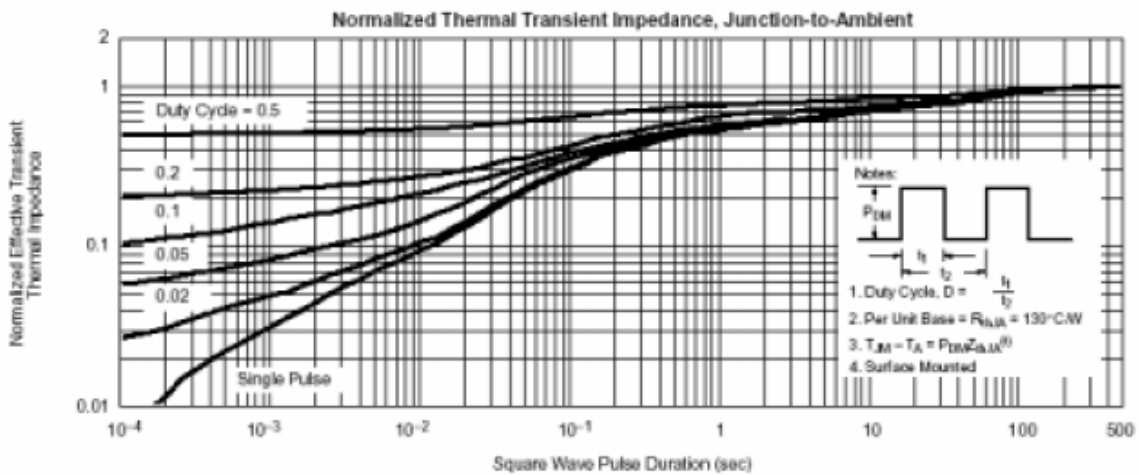
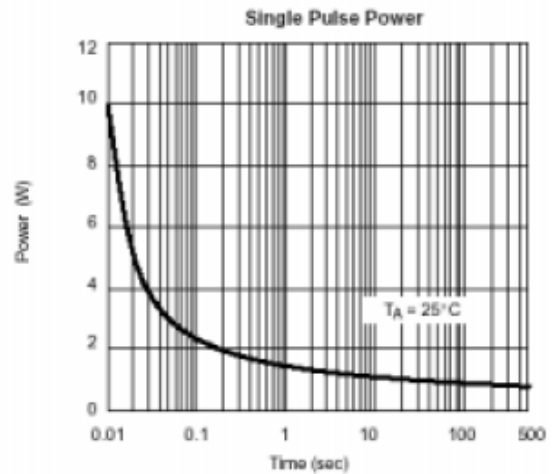
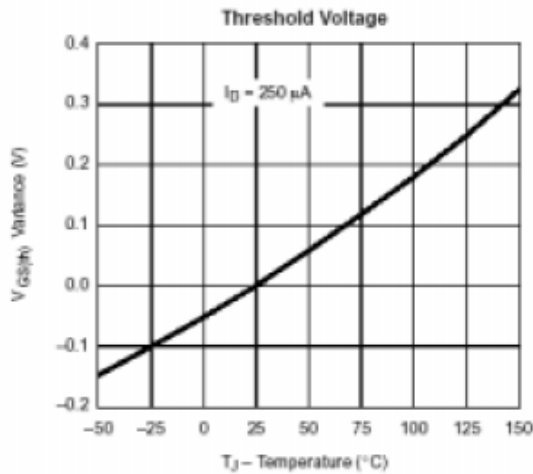
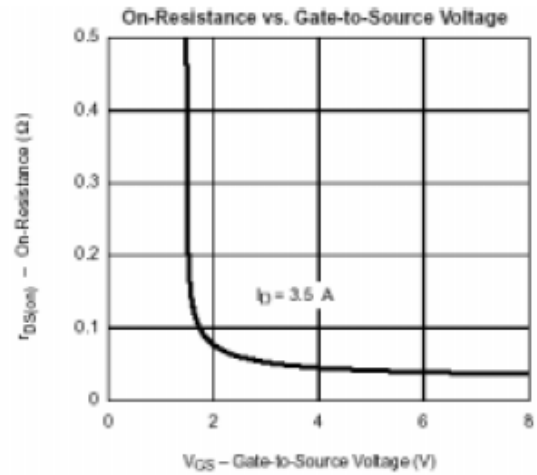
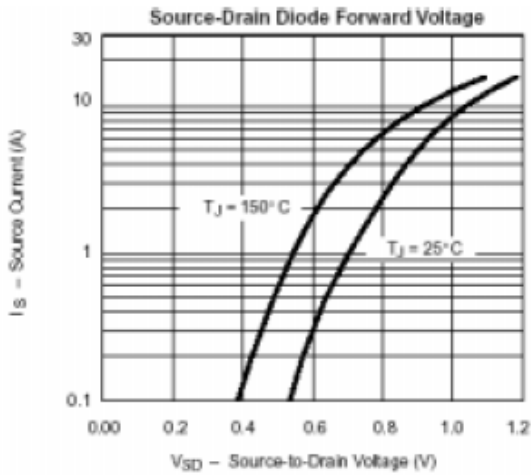
**P- Channel Enhancement Mode MOSFET**
**◆ TYPICAL CHARACTERISTICS**

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**P- Channel Enhancement Mode MOSFET**
**◆ PHYSICAL DIMENSIONS**  
**3-Pin surface Mount SOT-23(S)**
