

N-Channel Enhancement Mode MOSFET
◆ DESCRIPTION

The MT2342 is the N-Channel logic enhancement mode power field effect transistor is produced using high cell density, DMOS trench technology.

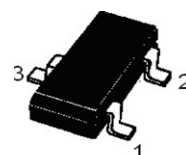
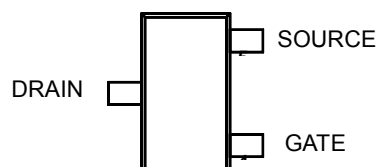
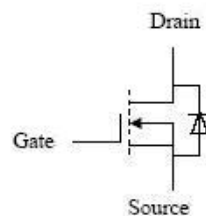
This high-density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other batter powered circuits, and low in-line power loss are needed in a very small outline surface mount package.

◆ FEATURES

- 20V/5.0A, $R_{DS(ON)} = 35 \text{ m}\Omega @ V_{GS} = 4.5\text{V}$
- 20V/4.5A, $R_{DS(ON)} = 40 \text{ m}\Omega @ V_{GS} = 2.5\text{V}$
- 20V/4.0A, $R_{DS(ON)} = 48 \text{ m}\Omega @ V_{GS} = 1.8\text{V}$
- 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

◆ 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	T _A = 25°C	I _D	4.0	A
	T _A = 70°C		3.0	
Pulsed Drain Current		I _{DM}	13	A
Continuous Source Current (Diode Conduction)		I _S	1.0	A
Power Dissipation	T _A = 25°C	P _D	1.25	W
	T _A = 70°C		0.8	
Operating junction temperature range		T _J	150	°C
Storage temperature range		T _{STG}	- 55 to 150	°C

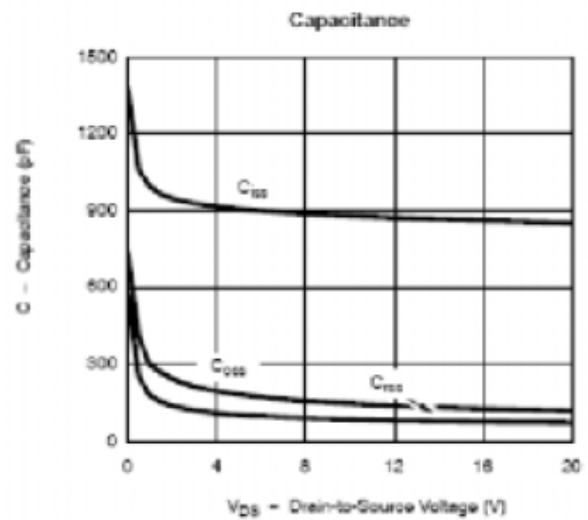
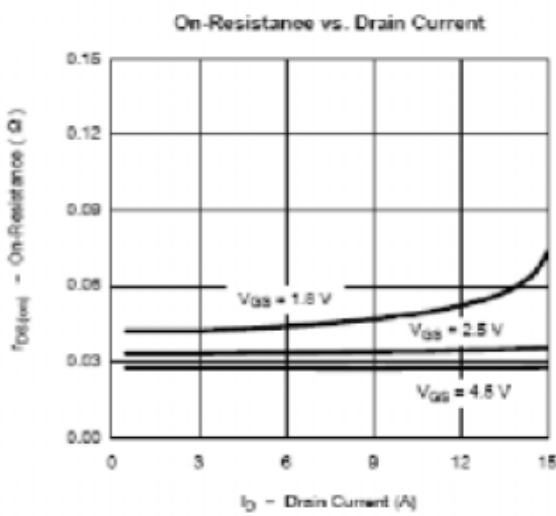
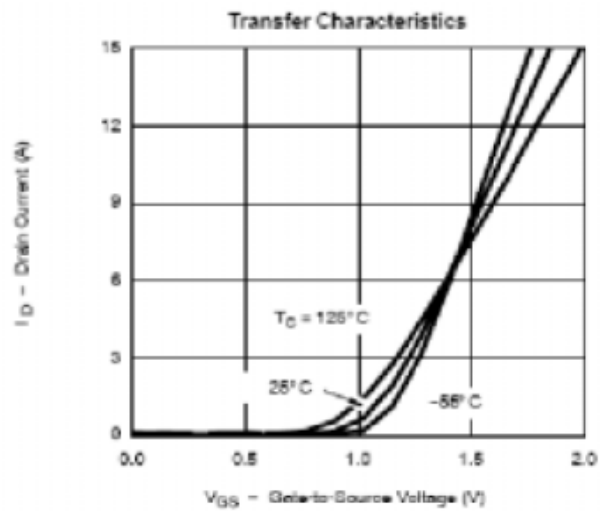
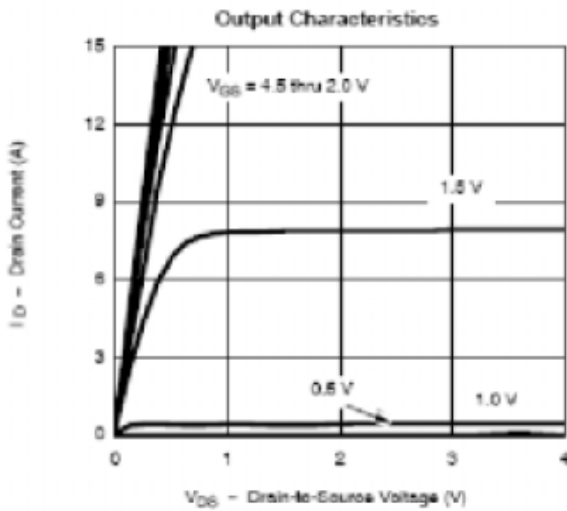
◆ THERMAL RESISTANCE RATINGS

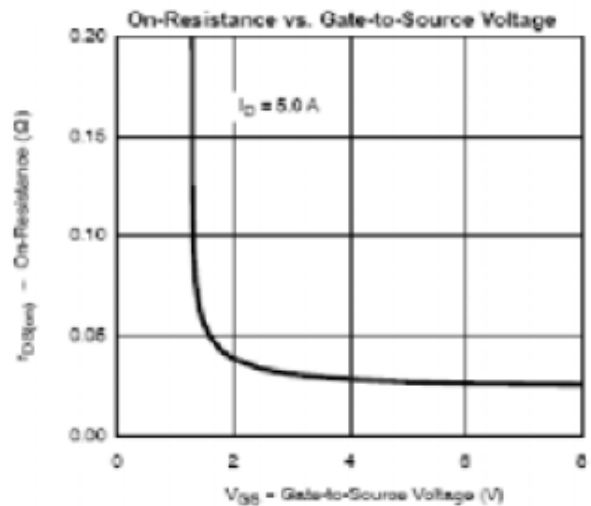
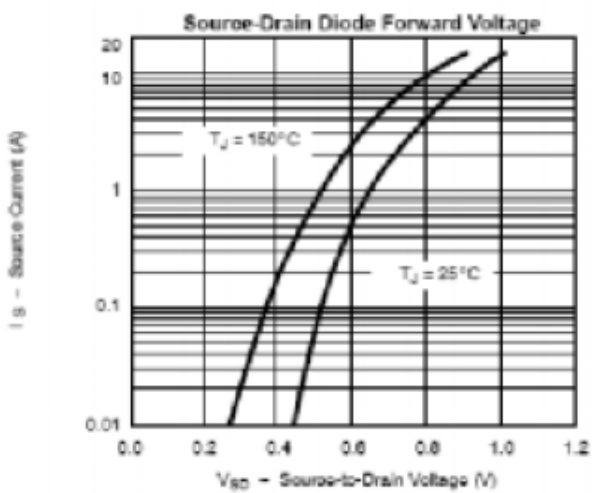
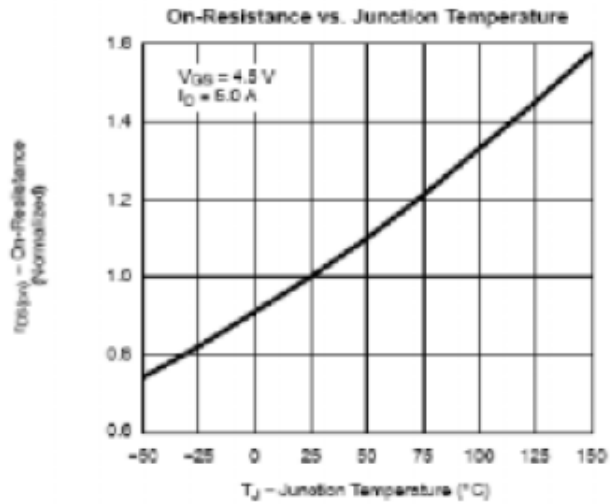
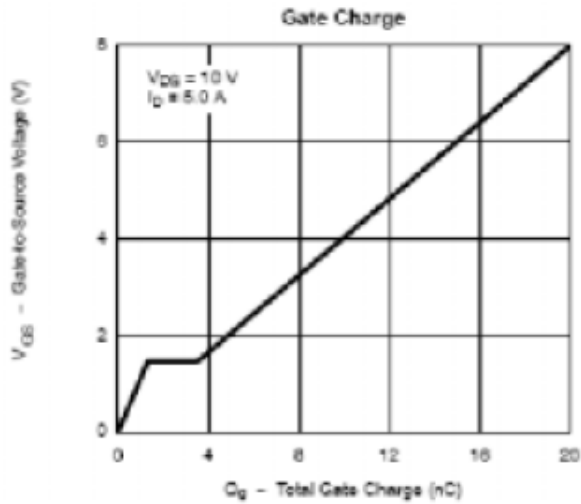
Parameter	Symbol	Maximum	Unit
Junction-to-Ambient	R _{θJA}	150	°C/W

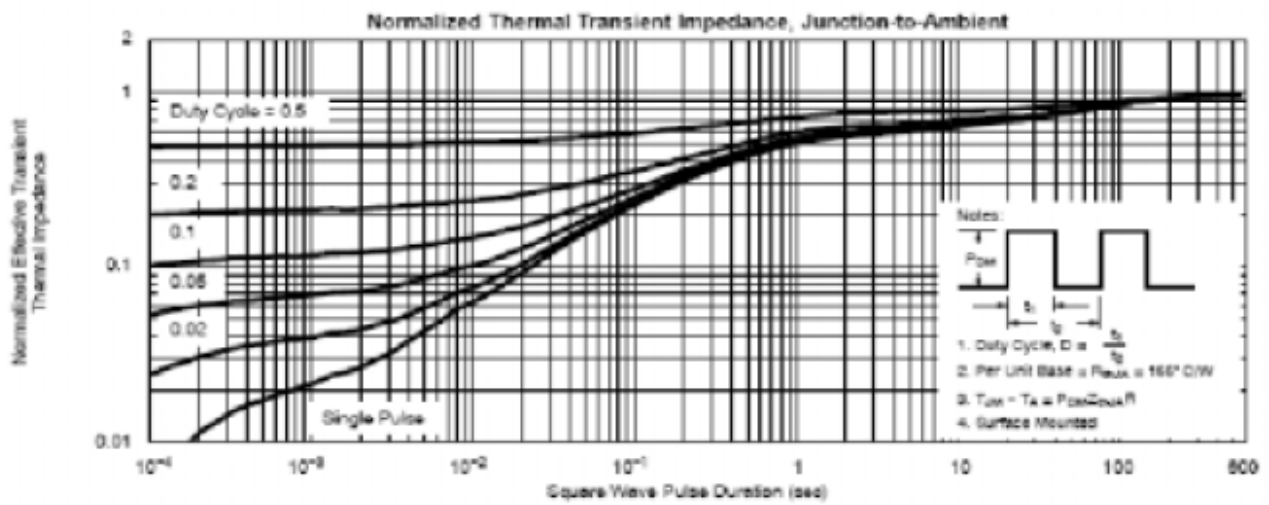
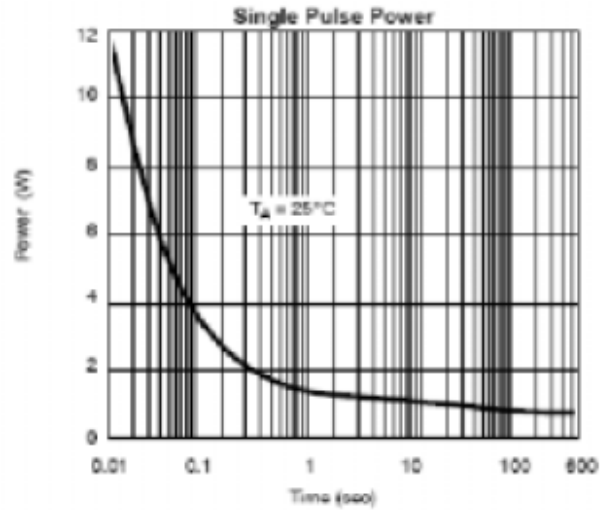
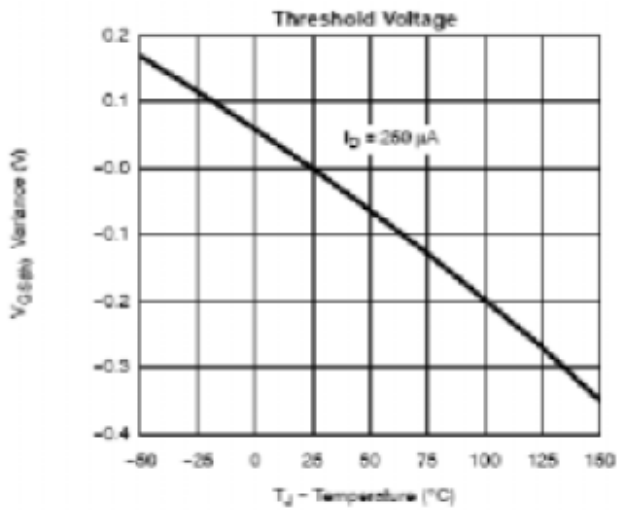
N-Channel Enhancement Mode MOSFET
◆ ELECTRICAL CHARACTERISTICS

 (T_A=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 = -250μA	20	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{GS} = V _{DS} , I _D = 250μA	0.4	-	1.0	V
Gate Leakage Current	I _{GSS}	V _{DS} = 0V, V _{GS} = ± 12 V	-	-	±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 20V, V _{GS} = 0 V	-	-	1	μA
		V _{DS} = 20V, V _{GS} = 0V, T _J = 55 °C	-	-	10	
Forward Trans conductance	g _{fs}	V _{DS} = 15V, I _D = 5.0A	-	30	-	S
On-State Drain Current	I _{D(ON)}	V _{DS} ≥ 5V, V _{GS} = 4.5V	6	-	-	A
Drain-Source On Resistance	R _{DS(ON)}	V _{GS} = 4.5V, I _D = 5.0A	-	26	35	mΩ
		V _{GS} = 2.5V, I _D = 4.5A	-	29	40	
		V _{GS} = 1.8V, I _D = 4.0A	-	35	48	
Diode Forward Voltage	V _{SD}	I _S = 1.0A, V _{GS} = 0V	-	0.8	1.2	V
Dynamic Parameters						
Input Cap.	C _{iss}	V _{DS} = 10V, V _{GS} = 0V, F = 1MHz	-	600	-	pF
Output Cap.	C _{oss}		-	120	-	
Reverse Transfer Cap.	C _{rss}		-	100	-	
Total Gate Charge	Q _g	V _{DS} = 10V, V _{GS} = 4.5V, I _D = 5.0A	-	10	13	nC
Gate-Source Charge	Q _{gs}		-	1.4	-	
Gate-Drain Charge	Q _{gd}		-	2.1	-	
Turn-On Time	T _{D(ON)}	V _{DS} = 10V, R _L = 10Ω, I _D = 1A, V _{GEN} = 4.5V, R _G = 6Ω	-	15	25	nS
	t _r		-	40	60	
Turn-Off Time	T _{D(OFF)}		-	45	65	
	t		-	30	40	

N-Channel Enhancement Mode MOSFET
◆ TYPICAL CHARACTERISTICS


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N-Channel Enhancement Mode MOSFET
◆ TYPICAL CHARACTERISTICS


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