

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

The MT2536 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.

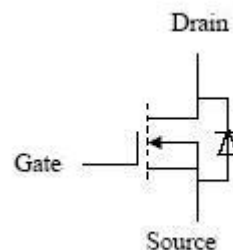
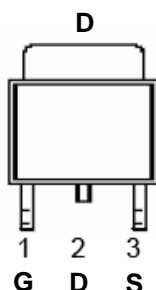
These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other Battery powered circuits, and low in-line power loss are needed in a very small outline surface mount package.

**◆ FEATURES**

- 30V/30A,  $R_{DS(ON)} = 9m\Omega @ V_{GS} = 10V$
- 30V/30A,  $R_{DS(ON)} = 13m\Omega @ V_{GS} = 4.5V$
- Super high density cell design for extremely ultra low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- TO-252 package design

**◆ APPLICATIONS**

- POWER Management
- Portable Equipment
- DC/DC Converter
- Load Switch
- DSC

**◆ PIN CONFIGURATION****TO-252(Top Site)**

**N- 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>	30	V
Gate-Source Voltage		V <sub>GS</sub>	±20	V
Continuous Drain Current	T <sub>A</sub> = 25°C	I <sub>D</sub>	57	A
	T <sub>A</sub> = 100°C		36	
Pulsed Drain Current <sup>A</sup>		I <sub>DM</sub>	200	A
Avalanche Current		I <sub>AS</sub>	23	A
Avalanche Energy (L=0.3mH)		E <sub>AS</sub>	80	mJ
Power Dissipation	T <sub>A</sub> = 25°C	P <sub>D</sub>	49	W
	T <sub>A</sub> = 100°C		19	
Operating junction temperature range		T <sub>J</sub>	- 55 to 150	°C
Storage temperature range		T <sub>STG</sub>	- 55 to 150	°C
Lead Temperature( 1/16" form case for 10 Sec.)		T <sub>L</sub>	275	°C

Note A: Pulse width limited by maximum junction temperature.

Note B: Duty Cycle ≤ 1%

**◆ THERMAL RESISTANCE RATINGS**

Thermal Resistance	Symbol	Maximum	Unit
Junction-to-Case	R <sub>θJC</sub>	2.55	°C/W
Junction-to-Ambient	R <sub>θJA</sub>	63	°C/W

**◆ ORDERING INFORMATION**

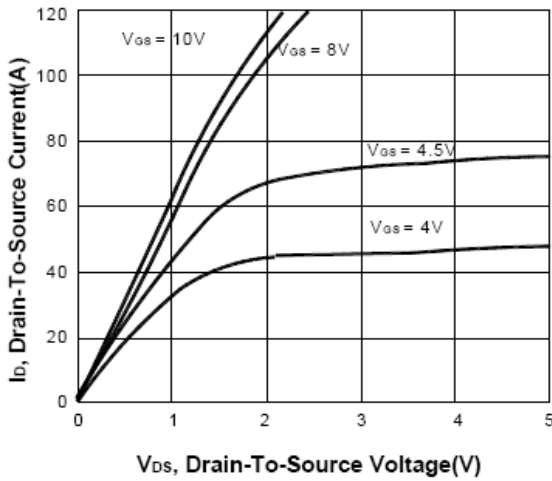
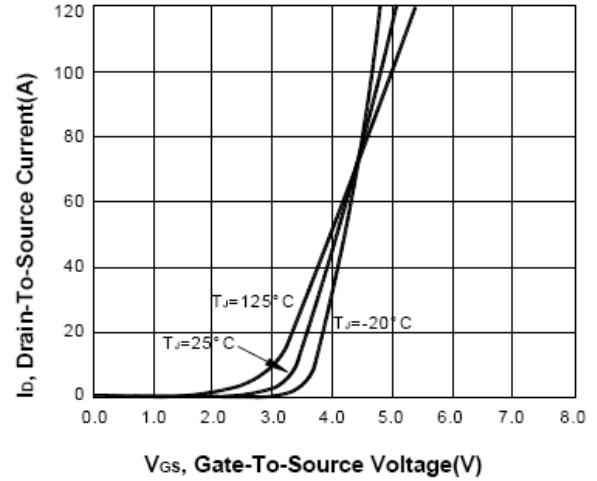
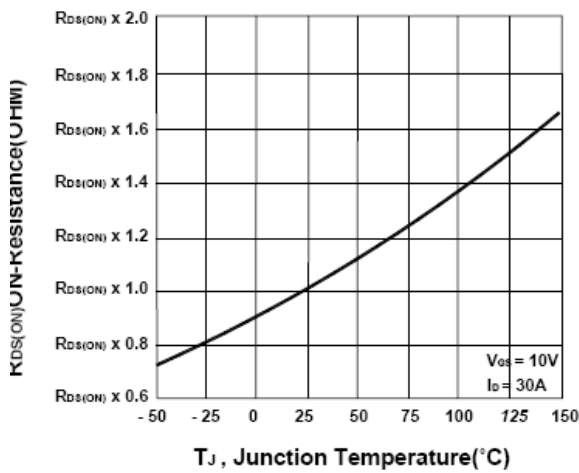
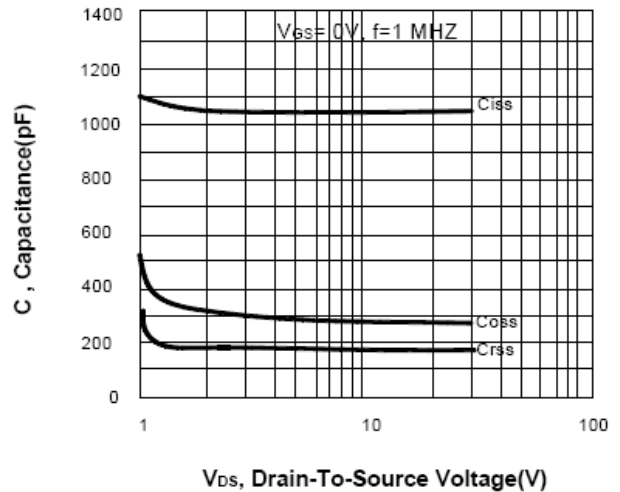
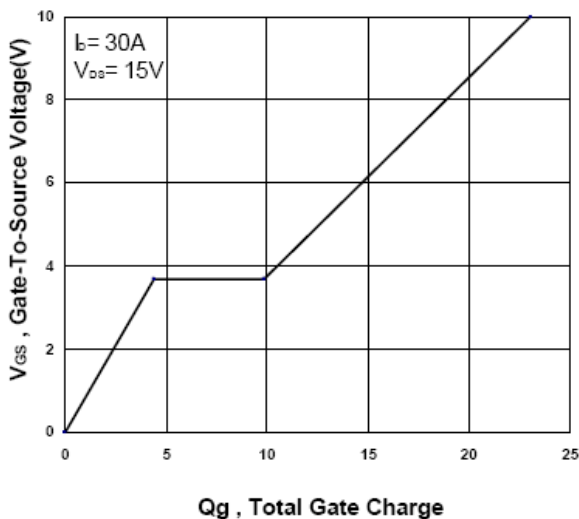
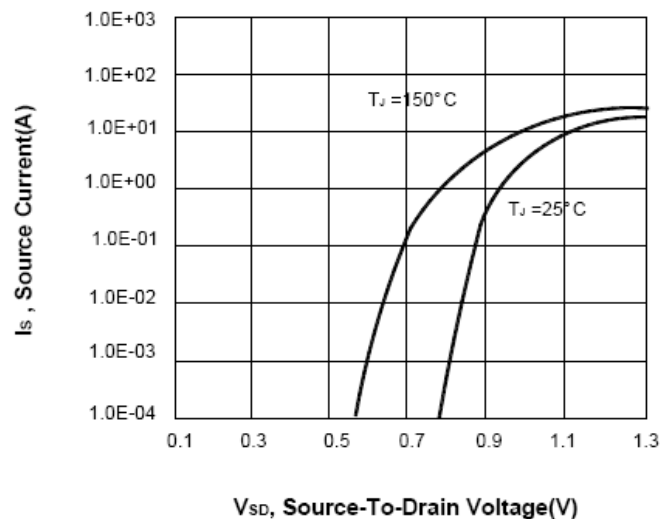
Device	Package	Shipping
MT2536	TO-252	2,500 PCS / Tape & Reel

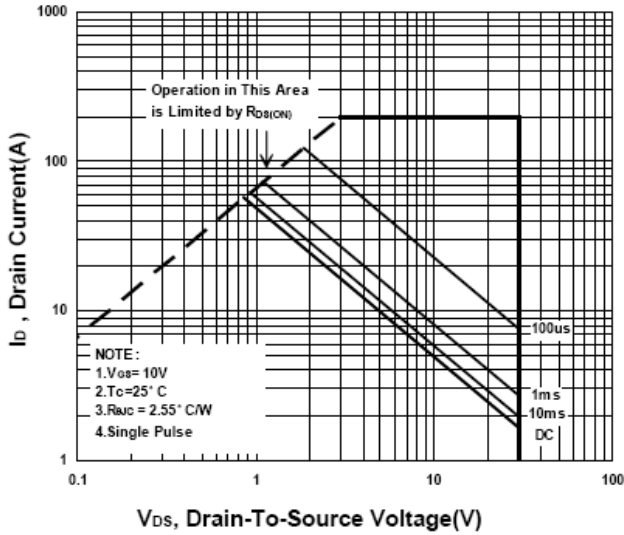
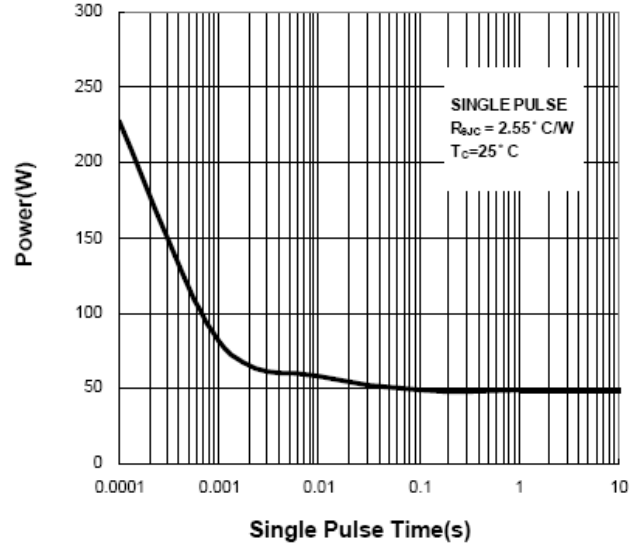
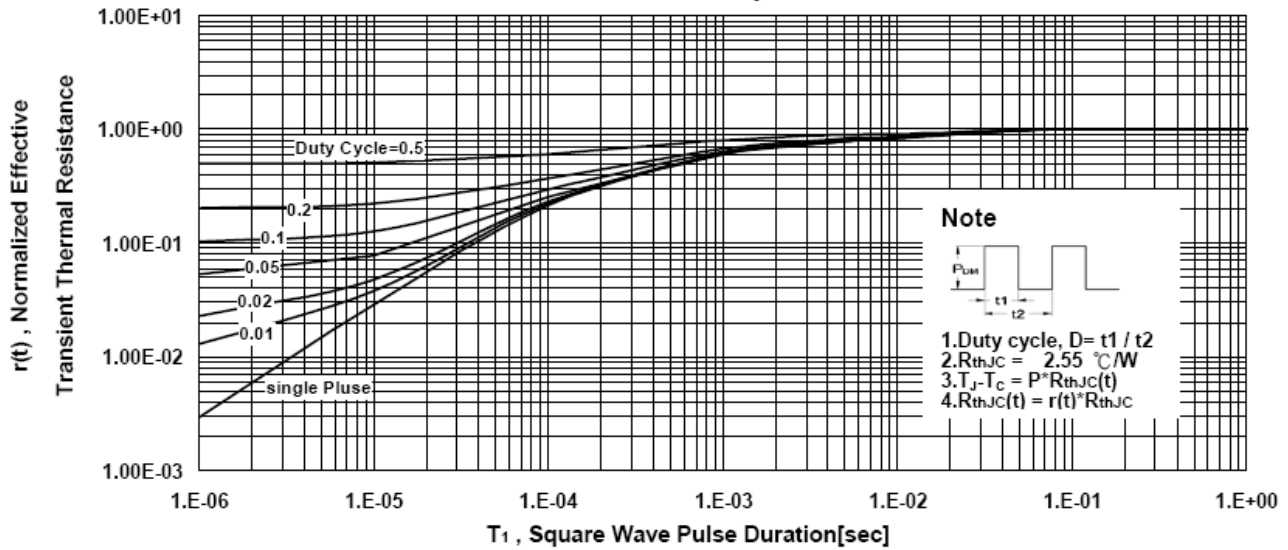
**N- Channel Enhancement Mode MOSFET**
**◆ ELECTRICAL CHARACTERISTICS** ( $T_A=25^\circ\text{C}$  Unless Otherwise Noted)

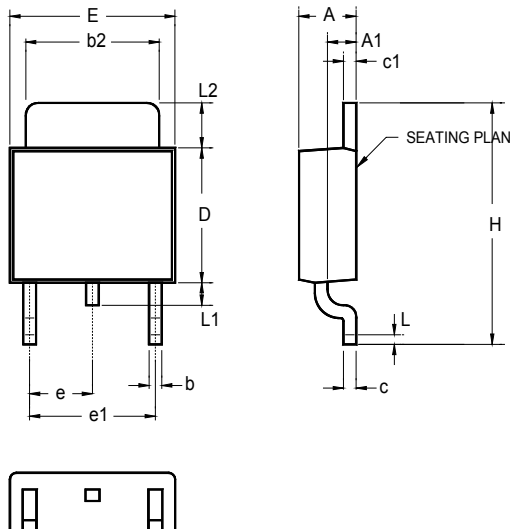
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
<b>Static Parameters</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS} = V_{DS}, I_D = 250\mu A$	1	1.5	3	V
Gate Current	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 24V, V_{GS} = 0V$	-	-	1	$\mu A$
		$V_{DS} = 20V, V_{GS} = 0V, T_J = 125^\circ\text{C}$	-	-	10	
Drain-Source On Resistance <sup>C</sup>	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 30A$	-	7	9	m $\Omega$
		$V_{GS} = 4.5V, I_D = 30A$	-	11	13	
Forward Trans conductance <sup>C</sup>	$g_{fs}$	$V_{DS} = 15V, I_D = 17A$	-	60	-	S
<b>Dynamic Parameters</b>						
Input Cap.	$C_{iss}$	$V_{DS} = 15V, V_{GS} = 0V, f = 1\text{MHz}$	-	1060	-	pF
Output Cap.	$C_{oss}$		-	281	-	
Reverse Transfer Cap.	$C_{rss}$		-	175	-	
Gate Resistance	$R_g$	$V_{GS} = 0V, V_{DS} = 0V, f = 1\text{MHz}$	-	1.41	-	$\Omega$
Total Gate Charge <sup>D</sup>	$Q_g$	$V_{DS} = 0.5V_{(BR)DSS}, V_{GS} = 10V, I_D = 30A$	-	23	-	nC
	$Q_{gs}$		-	4.4	-	
	$Q_{gd}$		-	5.5	-	
Turn-On Time <sup>D</sup>	$T_{D(ON)}$	$V_{DS} = 15V, I_D = 1A, R_L = 15\Omega, V_{GS} = 10V, R_{GEN} = 6\Omega$	-	16	-	nS
	$t_r$		-	25	-	
Turn-Off Time <sup>D</sup>	$T_{D(OFF)}$		-	60	-	
	$t_f$		-	16	-	
<b>Source-Drain Diode Ratings And Characteristics</b>						
Continuous Current	$I_S$		-	-	32	A
Forward Voltage <sup>C</sup>	$V_{SD}$	$I_F = I_S, V_{GS} = 0V$	-	-	1.3	V
Reverse Recovery Time	$t_{rr}$	$I_F = 3A, dI_F/dt = 100A/\mu S$	-	40	70	nS
Reverse Recovery Charge	$Q_{rr}$		-	28	-	nC

Note C: Pulse test: Pulse width  $\leq 300\mu\text{sec}$ , Duty Cycle  $\leq 2\%$

Note D: Independent of operating temperature.

**N- Channel Enhancement Mode MOSFET**
**◆ TYPICAL CHARACTERISTICS (25°C Unless Noted)**
**Output Characteristics**

**Transfer Characteristics**

**On-Resistance VS Temperature**

**Capacitance Characteristic**

**Gate charge Characteristics**

**Source-Drain Diode Forward Voltage**


**N- Channel Enhancement Mode MOSFET**
**◆ TYPICAL CHARACTERISTICS (25°C Unless Noted)**
**Safe Operating Area**

**Single Pulse Maximum Power Dissipation**

**Transient Thermal Response Curve**


**N- Channel Enhancement Mode MOSFET**
**◆ PHYSICAL DIMENSIONS**
**3-Pin Surface Mount TO-252 (B)**


	INCHES			MILLIMETERS		
	MIN	TYP	MAX	MIN	TYP	MAX
A	0.086	-	0.094	2.18	-	2.39
A1	0.040	-	0.050	1.02	-	1.27
b	-	0.024	-	-	0.61	-
b2	0.205	-	0.215	5.21	-	5.46
c	0.018	-	0.023	0.46	-	0.58
c1	0.018	-	0.023	0.46	-	0.58
D	0.210	-	0.220	5.33	-	5.59
E	0.250	-	0.265	6.35	-	6.73
e	0.090 BSC			2.29 BSC		
e1	0.180 BSC			4.58 BSC		
H	0.370	-	0.410	9.40	-	10.41
L	0.020	-	-	0.51	-	-
L1	0.025	-	0.040	0.64	-	1.02
L2	0.060	-	0.080	1.52	-	2.03