

## N-Channel 30V (D-S)MOSFET

### GENERAL DESCRIPTION

The 3400 is the N-Channel logic enhancement mode power field effect transistors, using high cell density, DMOS trench technology.

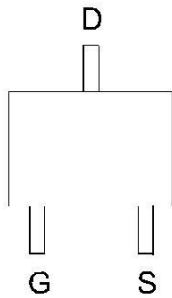
This high density process is especially tailored to minimize on-state resistance.

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

### PIN CONFIGURATION

(SOT23-3L)

Top View



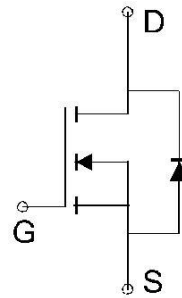
Ordering Information: 3400 (Pb-free)

### FEATURES

- $R_{DS(ON)} \leq 30m\Omega @ V_{GS}=10V$
- $R_{DS(ON)} \leq 35m\Omega @ V_{GS}=4.5V$
- $R_{DS(ON)} \leq 52m\Omega @ V_{GS}=2.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

### APPLICATIONS

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



### Absolute Maximum Ratings (TA=25°C Unless Otherwise Noted)

Parameter	Symbol	Maximum Ratings	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current	$I_D$	$T_A=25^\circ C$	A
		$T_A=70^\circ C$	
Pulsed Drain Current	$I_{DM}$	21.5	
Maximum Power Dissipation	$P_D$	$T_A=25^\circ C$	W
		$T_A=70^\circ C$	
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150	$^\circ C$
Thermal Resistance-Junction to Ambient*	$R_{\theta JA}$	90	$^\circ C/W$

\*The device mounted on 1in2 FR4 board with 2 oz copper



**N-Channel 30V (D-S)MOSFET**
**Electrical Characteristics (TA =25°C Unless Otherwise Specified)**

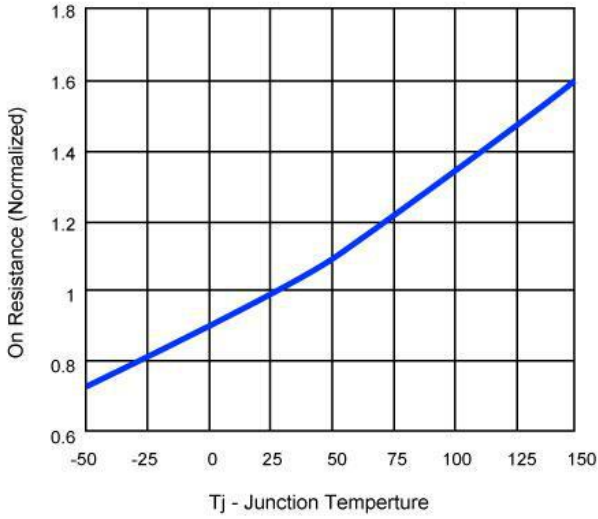
Symbol	Parameter	Limit	Min	Typ	Max	Unit
<b>STATIC PARAMETERS</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250 μ A	30			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250 μ A	0.7		1.4	
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V			±100	nA
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1	μ A
R <sub>DS(ON)</sub>	Drain-Source On-Resistance <sup>a</sup>	V <sub>GS</sub> =10V, I <sub>D</sub> = 5.8A		25	30	m Ω
		V <sub>GS</sub> =4.5V, I <sub>D</sub> = 3.5A		29	35	
		V <sub>GS</sub> =2.5V, I <sub>D</sub> = 2.8A		39	52	
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =1.25A, V <sub>GS</sub> =0V		0.8	1.2	V
<b>DYNAMIC PARAMETERS</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =15V, V <sub>GS</sub> =10V, I <sub>D</sub> =4A		15.5		nC
Q <sub>gs</sub>	Gate-Source Charge			3.2		
Q <sub>gd</sub>	Gate-Drain Charge			3.5		
R <sub>g</sub>	Gate Resistance	f =1MHz		0.7		Ω
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1MHz		480		pF
C <sub>oss</sub>	Output Capacitance			70		
C <sub>rss</sub>	Reverse Transfer Capacitance			18		
t <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> =15V, R <sub>L</sub> =15 Ω I <sub>D</sub> =1A, V <sub>GEN</sub> =10V, R <sub>G</sub> =6 Ω		8.5		ns
t <sub>r</sub>	Rise Time			17		
t <sub>d(off)</sub>	Turn-Off Delay Time			31		
t <sub>f</sub>	Fall Time			3		

Notes: pulse width ≅ 380us, duty cycle ≅ 2%

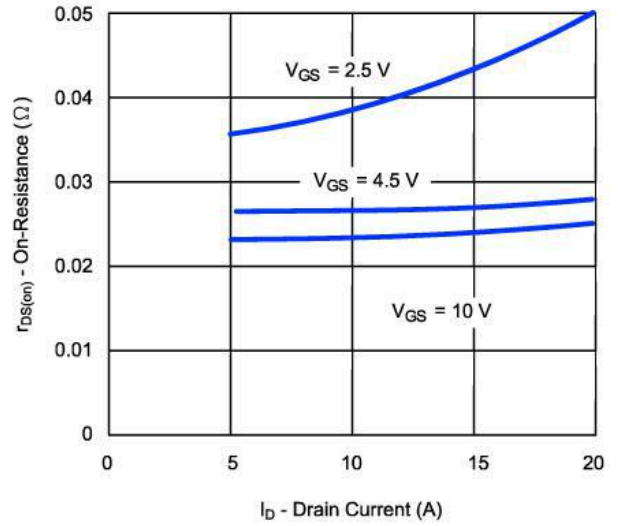


**N-Channel 30V (D-S)MOSFET**  
**Typical Characteristics (T<sub>J</sub> =25°C Noted)**

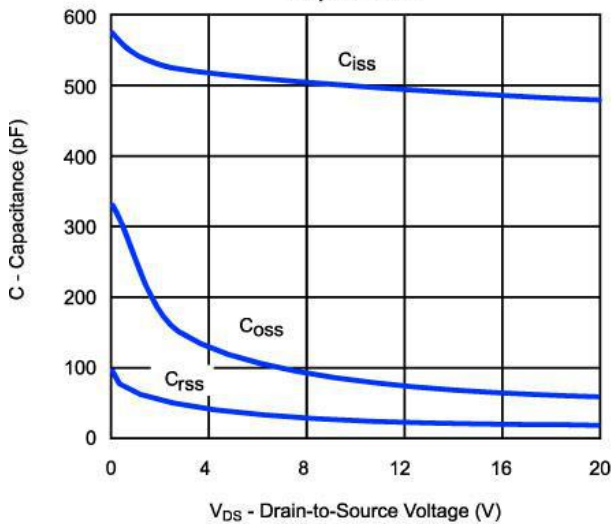
On Resistance vs. Junction Temperature



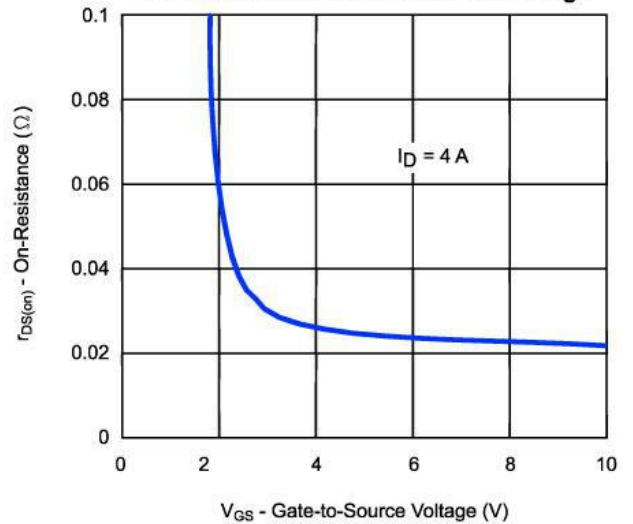
On-Resistance vs. Drain Current



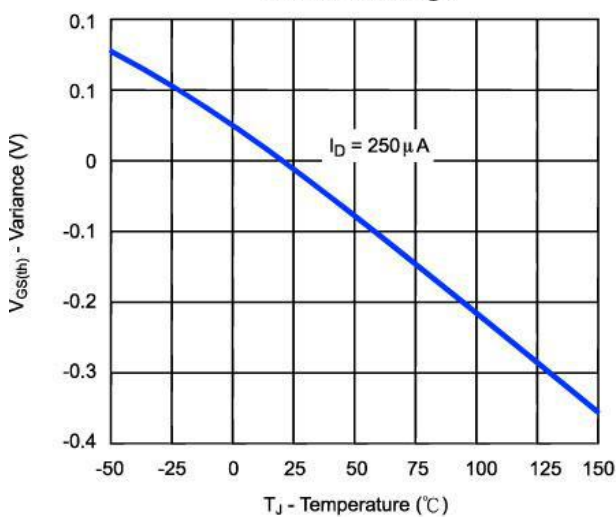
Capacitance



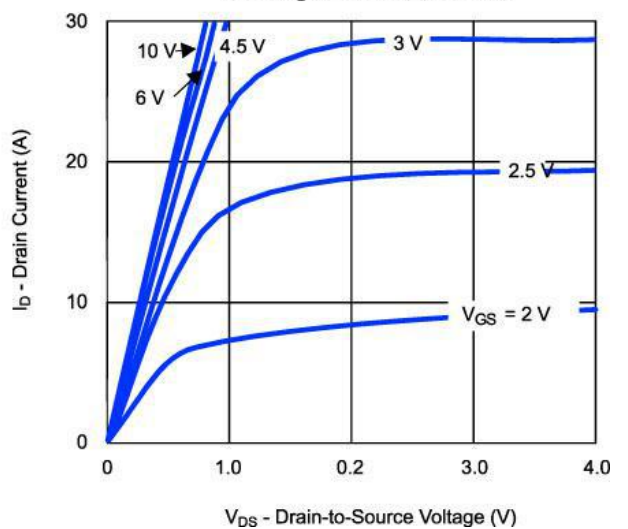
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

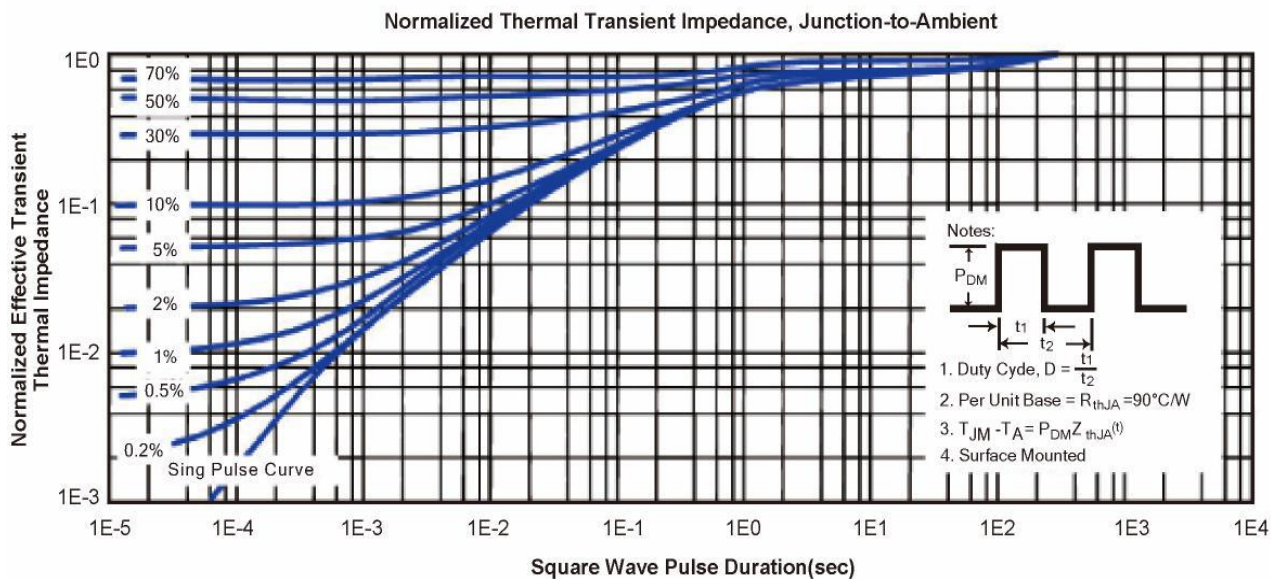
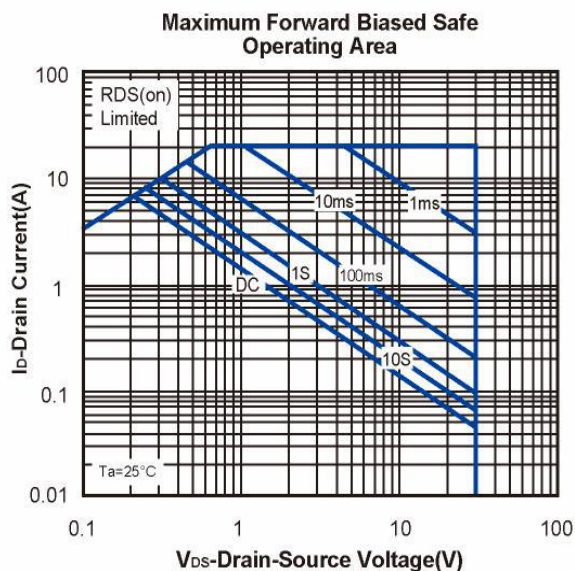
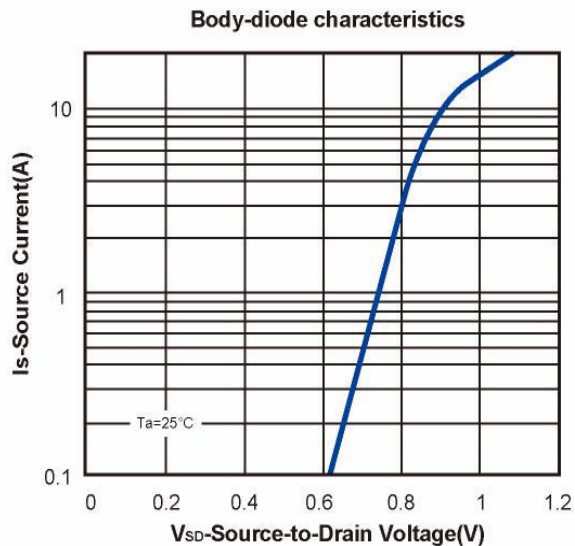
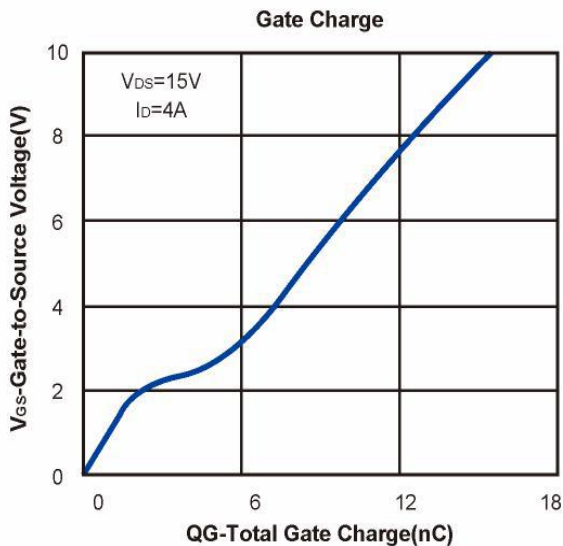


On-Region Characteristics





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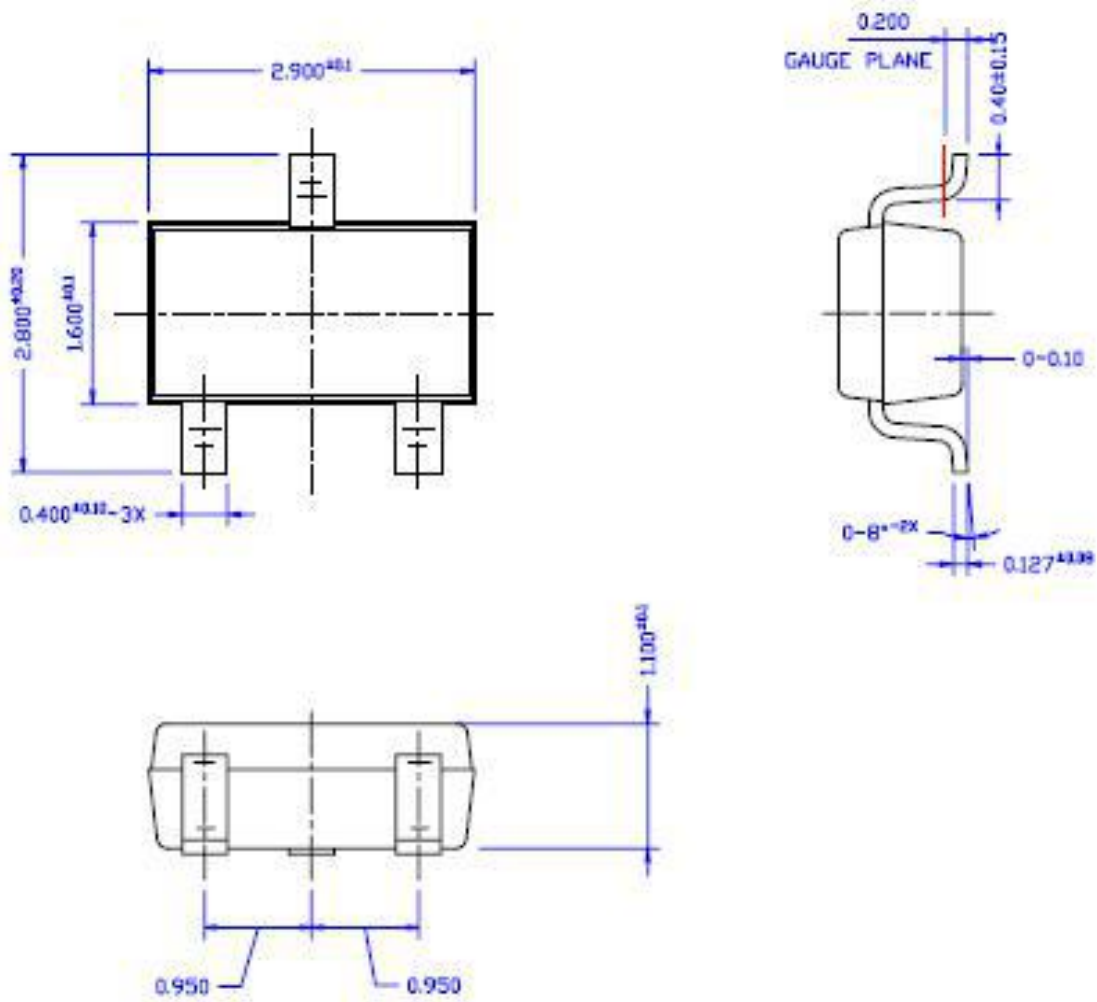






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SOT23-3L Package Outline



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