

Small Signal MOSFET 30 Volts N-Channel

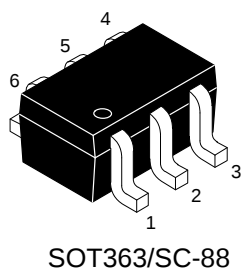
FEATURES:

- $R_{DS(ON)} \leq 8\Omega @ V_{GS}=4V$
- $R_{DS(ON)} \leq 13\Omega @ V_{GS}=2.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- Capable doing Cu wire bonding

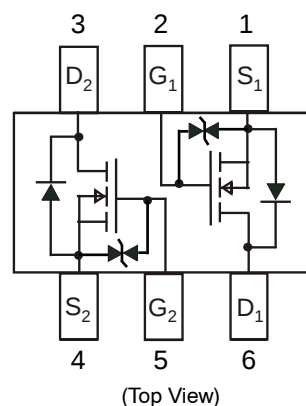
APPLICATIONS:

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- Load Switch

Circuit Diagram & Pin Configuration:



Simplified Schematic



DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
2N7002FDW1-S03T	72F	3000/Tape&Reel

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (Note 1.) $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	225 1.8	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	$^\circ\text{C/W}$
Total Device Dissipation Alumina Substrate, (Note 2.) $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	300 2.4	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	$^\circ\text{C/W}$
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

1. FR-5 = 1.0 x 0.75 x 0.062 in.

2. Alumina = 0.4 x 0.3 x 0.025 in 99.5% alumina.

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ Unless Otherwise Noted)

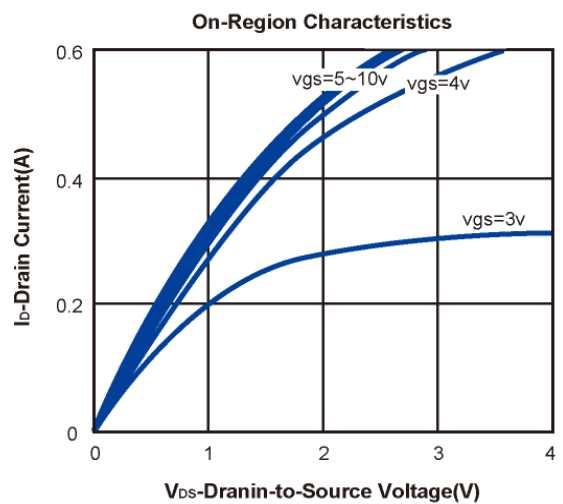
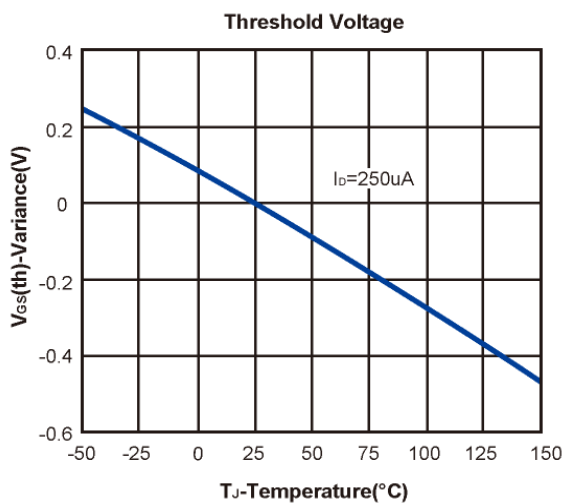
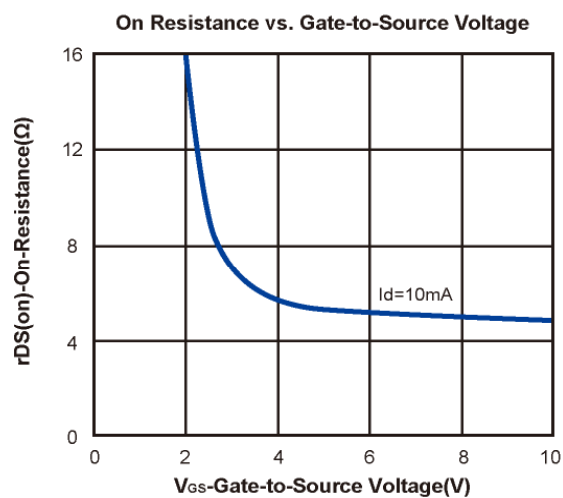
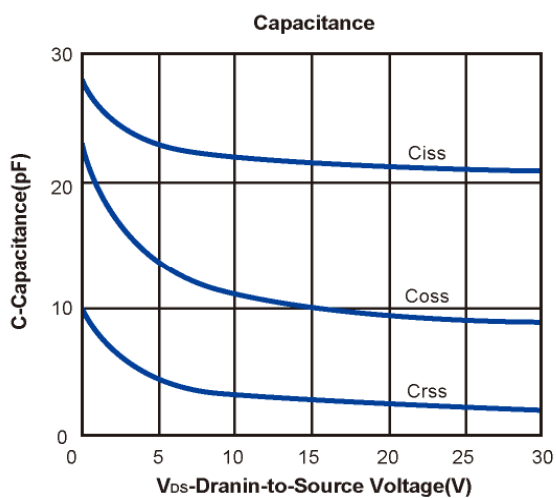
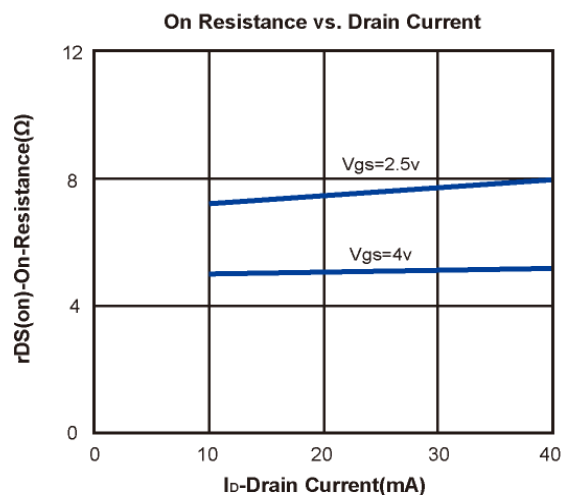
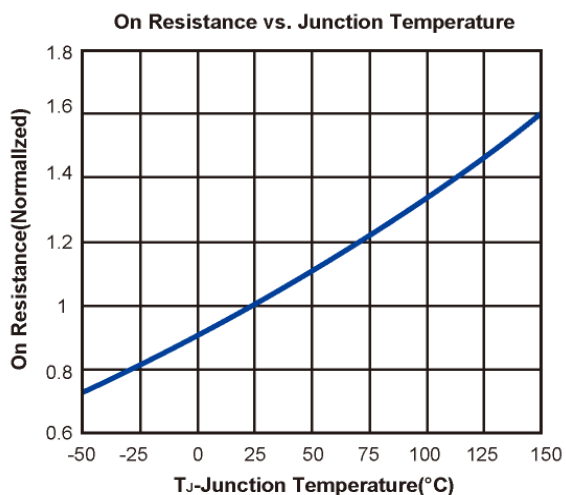
Parameter	Symbol	Maximum Ratings	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V

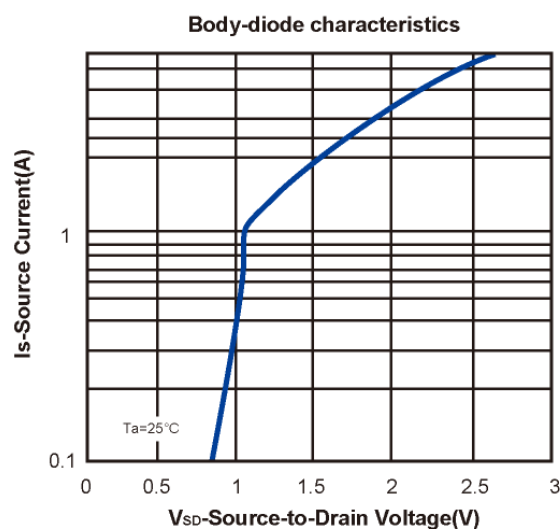
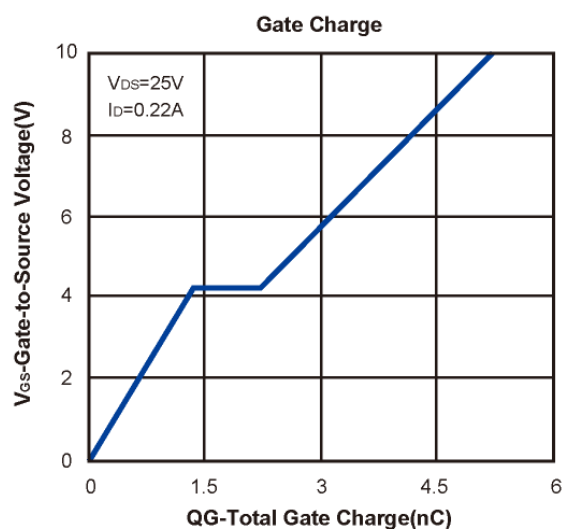
Electrical Characteristics ($T_j=25^{\circ}\text{C}$ Unless Otherwise Specified)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.8		1.5	V
I_{GSS}	Gate-Body Leakage	$V_{DS}=0V, V_{GS}=\pm 20V$			± 10	μA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$			1	μA
$R_{DS(ON)}$	Drain-Source On-Resistance*	$V_{GS}=4V, I_D=10mA$		5	8	Ω
		$V_{GS}=2.5V, I_D=1mA$		7	13	
V_{SD}	Diode Forward Voltage *	$I_S=200mA, V_{GS}=0V$			1.2	V
DYNAMIC						
Q_g	Total Gate Charge	$V_{DS}=25V, V_{GS}=10V, I_D=0.22A$		4.9		nC
Q_{gs}	Gate-Source Charge			2.1		
Q_{gd}	Gate-Drain Charge			0.6		
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		21		pF
C_{oss}	Output Capacitance			10		
C_{rss}	Reverse Transfer Capacitance			2		
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=5V, R_L=500\Omega$ $V_{GS}=5V, R_G=10\Omega$		10.1		ns
t_r	Turn-On Rise Time			7.3		
$t_{d(off)}$	Turn-Off Delay Time			31.3		
t_f	Turn-Off Fall Time			28.2		

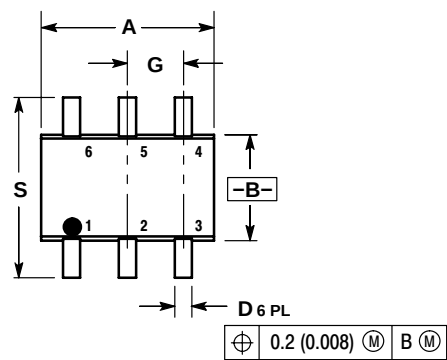
Notes: *. Pulse test; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Typical Characteristics (T_J = 25°C Noted)



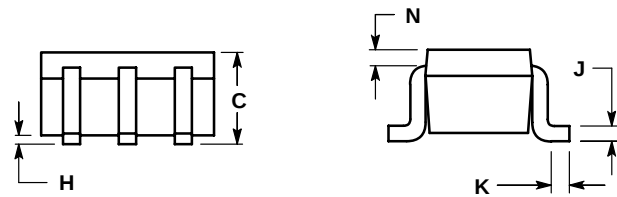
Typical Characteristics (T_J =25°C Noted)


SC-88 (SOT-363)
CASE 419B-02



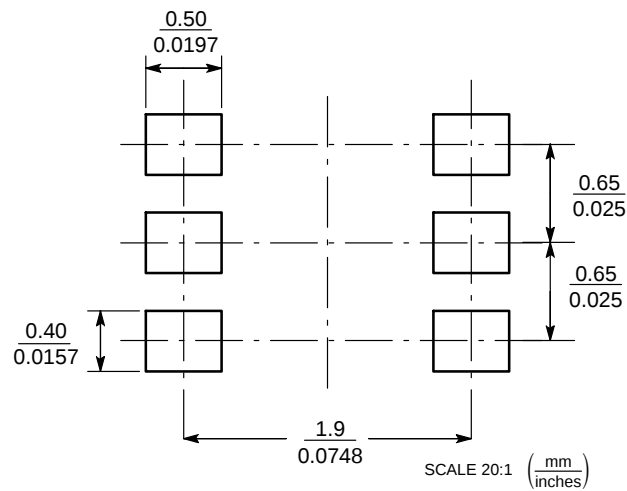
- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. 419B-01 OBSOLETE, NEW STANDARD 419B-02.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.071	0.087	1.80	2.20
B	0.045	0.053	1.15	1.35
C	0.031	0.043	0.80	1.10
D	0.004	0.012	0.10	0.30
G	0.026 BSC		0.65 BSC	
H	---	0.004	---	0.10
J	0.004	0.010	0.10	0.25
K	0.004	0.012	0.10	0.30
N	0.008 REF		0.20 REF	
S	0.079	0.087	2.00	2.20



- STYLE 1:
- PIN 1. SOURCE 2
 - GATE 2
 - DRAIN 1
 - SOURCE 1
 - GATE 1
 - DRAIN 2

SOLDERING FOOTPRINT*



NOTICE

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