NTJD4402NT1

Product Preview

Power MOSFET

30 V, N-Channel, ESD Protected, SC-88 Dual

This new N-Channel device was designed using ON Semiconductor's leading edge planar technology to deliver fast switching and relatively low $R_{DS(on)}$ performance.

There are two devices conveniently packaged in industry standard SC-88 (6-leads) to increase board density and facilitate system integration.

This device is particularly suited for high speed switching or load switch applications in single or dual cell Li-Ion battery supplied devices such as cell phones, media players, video games, PDA's, etc.

Features & Benefits

- Low Gate Charge for Fast Switching
- SC-88 Package Provides Excellent Thermal Performance
- Minimum Breakdown Voltage Rating of 30 V
- Surface Mount SC-88 Package Saves Board Space
- ESD Protected Gate
- Small Footprint: 45% Smaller than TSOP-6
- Low Voltage Drive (2.5 V) to Fascilitate Drive Circuit Design
- ESD HBM Level IB, MM Class A
- Lead Free Package to Facilitate "Green Manufacturing" Compliance

Applications

- Load Switch
- Power Management
- Battery Switch for 2 Cell Li-Ion Devices

MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	30	V
Gate-to-Source Voltage	V_{GS}	±20	V
Drain Current - Continuous @ T_A = 25°C (Note 1) - Pulsed Drain Current (t = 10 μs) (Note 2)	 I_D I_{DM}	 100 600	 mA mW
Steady State Power Dissipation @ T_A = 25°C (Note 1)	P_D	200	mW
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	°C
Continuous Source Current (Body Diode)	I_S	200	mA
Lead Temperature for Soldering Purposes (1/8″ from case for 10 seconds)	T_L	260	°C

1. Surface-mounted on FR4 board using 1″ sq pad size (Cu area = 1.127 in sq [1 oz] including traces)
2. Surface-mounted on FR4 board using the minimum recommended pad size (Cu area = TBD in sq)

This document contains information on a product under development. ON Semiconductor reserves the right to change or discontinue this product without notice.

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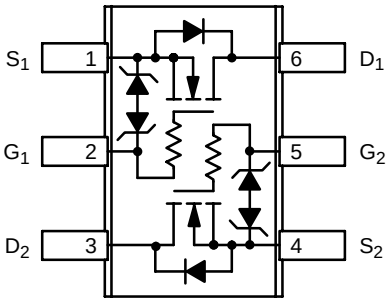
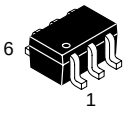
$V_{BR(DSS)}$ = 30 VOLTS
$R_{DS(on)}$ (max) = 2.7 Ω @ V_{GS} = 4.5 V, I_D = 10 mA
$R_{DS(on)}$ (max) = 4.0 Ω @ V_{GS} = 2.5 V, I_D = 1.0 mA

SOT-363 (N-Channel)
SC-88 (6-LEADS)

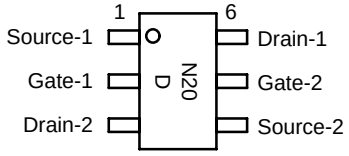


Top View



SC-88
CASE 419B
STYLE 1

MARKING DIAGRAM & PIN ASSIGNMENT



Top View

N20 = Specific Device Code
D = Date Code

ORDERING INFORMATION

Device	Package	Shipping
NTJD4402NT1	SC-88	3000/Tape & Reel

THERMAL RESISTANCE RATINGS

Thermal Resistance			°C/W
- Junction- to- Ambient - Steady State (Note 3)	$R_{\theta JA}$	TBD	
- Junction-to-Ambient - t = 10 s (Note 3)	$R_{\theta JA}$	TBD	
- Junction-to-Lead - Steady State (Note 4)	$R_{\theta JL}$	TBD	

3. Surface-mounted on FR4 board using 1″ sq pad size (Cu area = 1.127 in sq [1 oz] including traces)
4. Surface-mounted on FR4 board using the minimum recommended pad size (Cu area = TBD in sq)

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Drain-to-Source Breakdown Voltage (Note 5) (V_{GS} = 0 V, I_D = 100 μA)	$V_{(BR)DSS}$	30	-	-	V
Zero Gate Voltage Drain Current (Note 5) (V_{GS} = 0 V, V_{DS} = 20 V)	I_{DSS}	-	-	1.0	μA
Gate-to-Source Leakage Current (V_{GS} = ±10 V, V_{DS} = 0 V)	I_{GSS}	-	-	±1.0	μA
ON CHARACTERISTICS					
Gate Threshold Voltage (Note 5) (V_{DS} = 3.0 V, I_D = 100 μA)	$V_{GS(th)}$	0.8	-	1.5	V
Drain-to-Source On-Resistance (V_{GS} = 4.5 V, I_D = 10 mA) (V_{GS} = 2.5 V, I_D = 1.0 mA)	$R_{DS(on)}$	 - -	 TBD TBD	 2.7 4.0	
Forward Transconductance (V_{DS} = 3.0 V, I_D = 10 mA)	g_{FS}	-	TBD	-	S
CHARGES, CAPACITANCES & GATE RESISTANCE					
Input Capacitance	C_{iss}	-	TBD	-	pF
Output Capacitance	C_{oss}	-	TBD	-	
Reverse Transfer Capacitance	C_{rss}	-	TBD	-	
SWITCHING CHARACTERISTICS (Note 6)					
Turn-On Delay Time	$t_{d(on)}$	-	TBD	-	ns
Rise Time	t_r	-	TBD	-	
Turn-Off Delay Time	$t_{d(off)}$	-	TBD	-	
Fall Time	t_f	-	TBD	-	
DRAIN-SOURCE DIODE CHARACTERISTICS					
Forward Diode Voltage (V_{GS} = 0 V, I_{SD} = 10 mA)	V_{SD}	-	TBD	1.2	V
Reverse Recovery Time (dI_{SD}/dt = 100 A/μs, I_F = 10 mA)	t_{rr}	-	TBD	-	ns

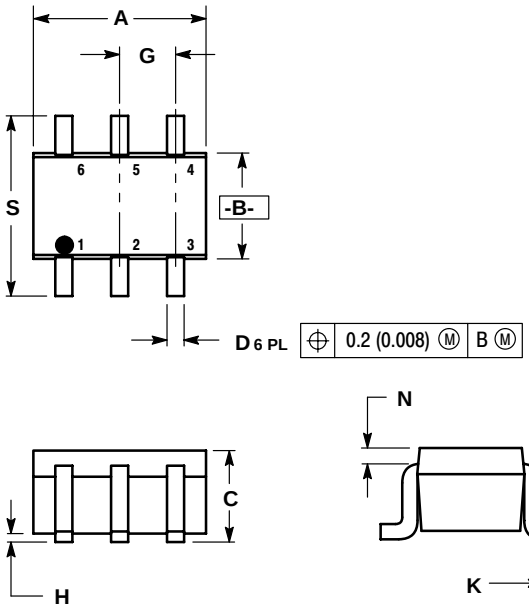
(V_{GS} = 0 V, f = 1 MHz, V_{DS} = 5.0 V)

(V_{GS} = 4.5 V, V_{DS} = 5.0 V, I_D = 10 mA, R_G = 10 Ω)

5. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.
6. Switching characteristics are independent of operating junction temperature.

PACKAGE DIMENSIONS

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



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

	INCHES		MILLIMETERS	
DIM	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. EMITTER 2
2. BASE 2
3. COLLECTOR 1
4. EMITTER 1
5. BASE 1
6. COLLECTOR 2

PUBLICATION ORDERING INFORMATION

Literature Fulfillment:
Literature Distribution Center for ON Semiconductor
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Sales Representative.