

NTA4151P, NTE4151P

Product Preview

Small Signal MOSFET

20 V, 350 mA, Single P-Channel,
Gate Zener, SC-75 & SC-89

Features

- Low $R_{DS(on)}$ for Higher Efficiency and Longer Battery Life
- Small Outline Package (1.6 x 1.6 mm)
- Low Threshold
- ESD Protected Gate
- Pb-Free Package for Green Manufacturing (G Suffix)

Applications

- Battery Operated Systems
- Load Switch for Cell Phones, PDAs, Digital Cameras, etc.
- Power Supply Converter Circuits

MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$ unless otherwise stated)

Parameter		Symbol	Value	Units
Drain-to-Source Voltage		V_{DS}	-20	V
Gate-to-Source Voltage		V_{GS}	± 6.0	V
Continuous Drain Current (Note 1)	Steady State	I_D	-350	mA
Power Dissipation (Note 1)	Steady State	P_D	150	mW
Pulsed Drain Current	$t_p = 10 \mu\text{s}$	I_{DM}	± 1000	mA
Operating Junction and Storage Temperature		T_J, T_{STG}	-55 to 150	$^\circ\text{C}$
Continuous Source Current (Body Diode)		I_S	-250	mA
Lead Temperature for Soldering Purposes (1/8" from case for 10 s)		T_L	260	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

Junction-to-Ambient – Steady State (Note 1)	$R_{\theta JA}$	TBD	$^\circ\text{C/W}$
Junction-to-Ambient – $t \leq 10$ s (Note 1)	$R_{\theta JA}$	TBD	

1. Surface mounted on FR4 board using 1 in sq. pad size (Cu area = 1.127 in sq. [1 oz] including traces).

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

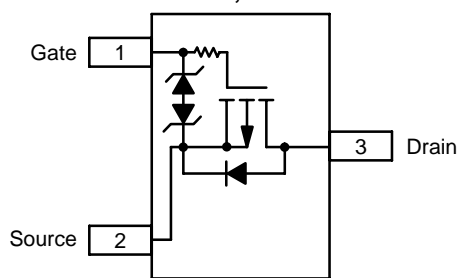


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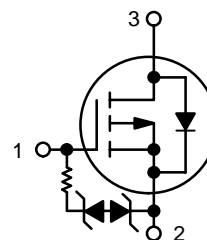
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$V_{(BR)DS}$	$R_{DS(on)}$ TYP	I_D MAX
-20 V	0.55 Ω @ -4.5 V	-350 mA
	0.75 Ω @ -2.5 V	
	1.2 Ω @ -1.8 V	

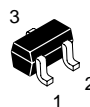
SC-75, SC-89



Top View



P-Channel MOSFET

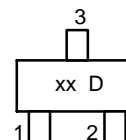


SC-75 / SOT-416
CASE 463
STYLE 5



SC-89
CASE 463C

MARKING DIAGRAM



xx = Specific Device Code
D = Date Code

ORDERING INFORMATION

Device	Package	Shipping
NTx4151PT1	TBD	TBD
NTx4151PT1G	TBD (Pb-Free)	TBD

NTA4151P, NTE4151P

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise stated)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Drain-to-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = -250 μA	-20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{GS} = 0 V, V _{DS} = -16 V			-100	nA
Gate-to-Source Leakage Current	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±4.5 V			±2.0	μA

ON CHARACTERISTICS (Note 2)

Gate Threshold Voltage	V _{GS(TH)}	V _{DS} = 3.0 V, I _D = 250 μA	-0.45		1.0	V
Drain-to-Source On Resistance	R _{DS(on)}	V _{GS} = -4.5 V, I _D = -350 mA		0.55	0.8	Ω
		V _{GS} = -2.5 V, I _D = -300 mA		0.75	1.2	
		V _{GS} = -1.8 V, I _D = -150 mA		1.2	1.8	
Forward Transconductance	g _{FS}	V _{DS} = 10 V, I _D = -250 mA		0.4		S

CHARGES AND CAPACITANCES

Input Capacitance	C _{ISS}	V _{GS} = 0 V, f = 1.0 MHz, V _{DS} = 5.0 V		TBD		pF
Output Capacitance	C _{OSS}			TBD		
Reverse Transfer Capacitance	C _{RSS}			TBD		

SWITCHING CHARACTERISTICS (Note 3)

Turn-On Delay Time	td(ON)	V _{GS} = -4.5 V, V _{DD} = -10 V, I _D = 10 mA, R _G = 10 Ω		TBD		ns
Rise Time	tr			TBD		
Turn-Off Delay Time	td(OFF)			TBD		
Fall Time	tf			TBD		

DRAIN-SOURCE DIODE CHARACTERISTICS

Forward Diode Voltage	V _{SD}	V _{GS} = 0 V, I _S = -150 mA		TBD	-1.2	V
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- Pulse Test: pulse width ≤ 300 μs, duty cycle ≤ 2%.
- Switching characteristics are independent of operating junction temperatures.

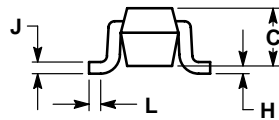
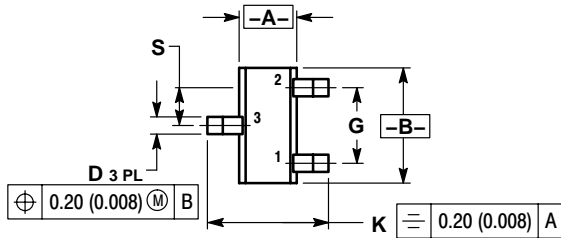
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PACKAGE DIMENSIONS

SC-75 / SOT-416

CASE 463-01

ISSUE C



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.70	0.90	0.028	0.035
B	1.40	1.80	0.055	0.071
C	0.60	0.90	0.024	0.035
D	0.15	0.30	0.006	0.012
G	1.00 BSC		0.039 BSC	
H	---	0.10	---	0.004
J	0.10	0.25	0.004	0.010
K	1.45	1.75	0.057	0.069
L	0.10	0.20	0.004	0.008
S	0.50 BSC		0.020 BSC	

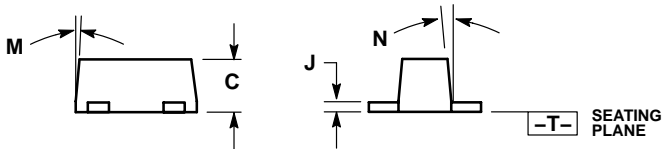
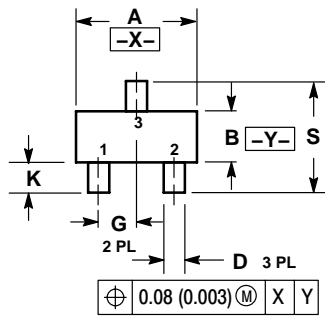
STYLE 5:

- PIN 1. GATE
- SOURCE
- DRAIN

SC-89

CASE 463C-03


ISSUE C



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 463C-01 OBSOLETE, NEW STANDARD 463C-02.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.50	1.60	1.70	0.059	0.063	0.067
B	0.75	0.85	0.95	0.030	0.034	0.040
C	0.60	0.70	0.80	0.024	0.028	0.031
D	0.23	0.28	0.33	0.009	0.011	0.013
G	0.50 BSC			0.020 BSC		
H	0.53 REF			0.021 REF		
J	0.10	0.15	0.20	0.004	0.006	0.008
K	0.30	0.40	0.50	0.012	0.016	0.020
L	1.10 REF			0.043 REF		
M	---	---	10	---	---	10
N	---	---	10	---	---	10
S	1.50	1.60	1.70	0.059	0.063	0.067

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