



Solid State Devices, Inc.

14701 Firestone Blvd * La Mirada, Ca 90638
Phone: (562) 404-4474 * Fax: (562) 404-1773
ssdi@ssdi-power.com * www.ssdi-power.com

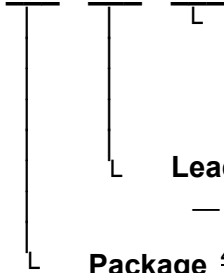
SFF100N20/3T

100 AMP , 200 Volts, 25 mΩ Avalanche Rated N-channel MOSFET

DESIGNER'S DATA SHEET

Part Number / Ordering Information ^{1/}

SFF100N20



Screening ^{2/}

— = Not Screened
TX = TX Level
TXV = TXV Level
S = S Level

Lead Option

— = Straight Leads

Package ^{4/}

/3T= TO-3 (Pin Diameter : 0.058"-0.063")

Features:

- Rugged poly-Si gate
- Lowest ON-resistance in the industry
- Avalanche rated
- Hermetically Sealed, Power Package with high pin current carrying capability
- Low Total Gate Charge
- Fast Switching
- TX, TXV, S-Level screening available
- Improved ($R_{DS(ON)}$, Q_G) figure of merit

Maximum Ratings ^{5/}		Symbol	Value	Units
Drain - Source Voltage		V_{DSS}	200	V
Gate - Source Voltage	continuous transient	V_{GS}	± 20 ± 30	V
Max. Continuous Drain Current (package limited)	@ $T_C = 25^\circ C$	I_{D1}	55	A
Max. Instantaneous Drain Current (Tj limited)	@ $T_C = 25^\circ C$	I_{D2}	100	A
	@ $T_C = 125^\circ C$	I_{D3}	40	A
Max. Avalanche current	@ L= 0.1 mH	I_{AR}	60	A
Single and Repetitive Avalanche Energy	@ L= 0.1 mH	E_{AS}	1500	mJ
		E_{AR}	50	mJ
Total Power Dissipation	@ $T_C = 25^\circ C$	P_D	300	W
Operating & Storage Temperature		T_{OP} & T_{STG}	-55 to +175	$^\circ C$
Maximum Thermal Resistance (Junction to Case)		$R_{\theta JC}$	0.5 (typ.0.3)	$^\circ C/W$

NOTES:

*Pulse Test: Pulse Width = 300μsec, Duty Cycle = 2%.

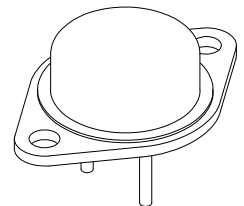
1/ For ordering information, price, and availability - contact factory.

2/ Screening based on MIL-PRF-19500. Screening flows available on request.

4/ Maximum current limited by package configuration

5/ Unless otherwise specified, all electrical characteristics @25°C.

TO-3



NOTE: All specifications are subject to change without notification.
SCD's for these devices should be reviewed by SSDI prior to release.

DATA SHEET #: FT0044A

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SFF100N20/3T

Electrical Characteristics ^{5/}	Symbol	Min	Typ	Max	Units
Drain to Source Breakdown Voltage $V_{GS} = 0V, I_D = 250\mu A$	BV_{DSS}	200	220	—	V
Drain to Source On State Resistance $V_{GS} = 10V, I_D = 48A, T_j = 25^\circ C$ $V_{GS} = 10V, I_D = 48A, T_j = 125^\circ C$ $V_{GS} = 10V, I_D = 48A, T_j = 175^\circ C$	$R_{DS(on)}$	—	25 50 65	30 65 —	mΩ
Gate Threshold Voltage $V_{DS} = V_{GS}, I_D = 4.0mA, T_j = 25^\circ C$ $V_{DS} = V_{GS}, I_D = 4.0mA, T_j = 125^\circ C$ $V_{DS} = V_{GS}, I_D = 4.0mA, T_j = -55^\circ C$	$V_{GS(th)}$	2.5 1.5 —	4.5 3.6 5	5.0 — 6	V
Gate to Source Leakage $V_{GS} = \pm 20V, T_j = 25^\circ C$ $V_{GS} = \pm 20V, T_j = 125^\circ C$	I_{GSS}	— —	10 30	±100 —	nA
Zero Gate Voltage Drain Current $V_{DS} = 200V, V_{GS} = 0V, T_j = 25^\circ C$ $V_{DS} = 200V, V_{GS} = 0V, T_j = 125^\circ C$ $V_{DS} = 200V, V_{GS} = 0V, T_j = 150^\circ C$	I_{DSS}	— — —	0.01 2.5 25	25 150 —	μA μA μA
Forward Transconductance $V_{DS} = 10V, I_D = 48A, T_j = 25^\circ C$	g_{fs}	25	50	—	Mho
Total Gate Charge $V_{GS} = 10V$	Q_g	—	150	250	nC
Gate to Source Charge $V_{DS} = 100V$	Q_{gs}	—	45	65	nC
Gate to Drain Charge $I_D = 48A$	Q_{gd}	—	75	120	nC
Turn on Delay Time $V_{GS} = 10V$	$t_{d(on)}$	—	50	75	nsec
Rise Time $V_{DS} = 100V$	t_r	—	50	75	
Turn off Delay Time $I_D = 48A$	$t_{d(off)}$	—	110	135	
Fall Time $R_G = 4.0\Omega, pw = 3\mu s$	t_f	—	50	75	
Diode Forward Voltage $I_F = 48A, V_{GS} = 0V$	V_{SD}	—	0.90	1.5	V
Diode Reverse Recovery Time $I_F = 10A, di/dt = 100A/\mu sec$	t_{rr1}	—	190	250	nsec
Reverse Recovery Charge $I_F = 10A, di/dt = 100A/\mu sec$	I_{rm1}	—	11	—	A
$I_F = 10A, di/dt = 100A/\mu sec$	Q_{rr1}	—	1	—	μC
$I_F = 25A, di/dt = 100A/\mu sec$	t_{rr2}	—	310	—	nsec
$I_F = 25A, di/dt = 100A/\mu sec$	I_{rm2}	—	17	—	A
$I_F = 25A, di/dt = 100A/\mu sec$	Q_{rr2}	—	2.5	—	μC
Input Capacitance $V_{GS} = 0V$	C_{iss}	—	5300	—	pF
Output Capacitance $V_{DS} = 25V$	C_{oss}	—	1050	—	
Reverse Transfer Capacitance $f = 1 MHz$	C_{rss}	—	175	—	

Package Outline: TO-3

Pin Out:

Pin 1: GATE

Pin 2: SOURCE

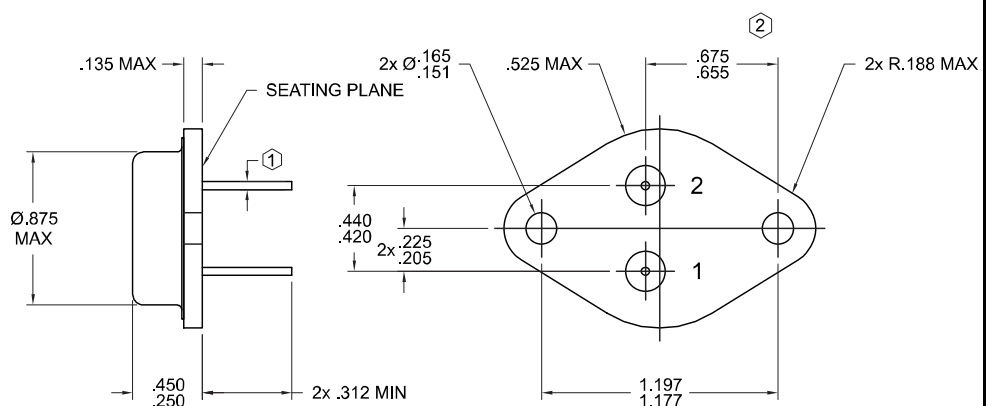
Pin 3: DRAIN

Note 1:

P/N: SFF80N20/3T
 Pin Diameter: 0.063"
 0.058"

Note 2:

This dimension shall be measured at points .050 - .055" below the seating plane. When gage is not used, measurement will be made at seating plane. This outline does not meet the minimum criteria established by JS-10 for registration.



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