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

SFF80N20S1

80 AMP , 200 Volts, 15 mΩ
Avalanche Rated
N-channel MOSFET

DESIGNER'S DATA SHEET

Part Number / Ordering Information [1/]

SFF80N20 ____ ____

Screening [2/]
__ = Not Screened
TX = TX Level
TXV = TXV Level
S = S Level

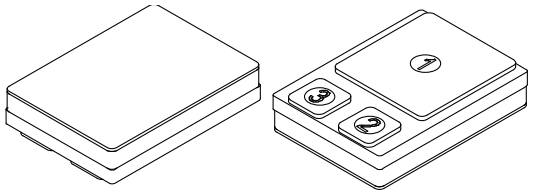
Package
S1 = SMD1

Features:
- Rugged poly-Si gate
- Lowest ON-resistance in the industry
- Avalanche rated
- Hermetically sealed surface mount package
- Low total gate charge
- Fast switching
- TX, TXV, S-Level screening available
- Improved ($R_{DS(ON)}$ Q_G) figure of merit

Maximum Ratings[3/]		Symbol	Value	Unit
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°C	I_{D1}	55	A
Max. Instantaneous Drain Current (Tj limited)	@ T_C = 25°C @ T_C = 175°C	I_{D2} I_{D3}	80 48	A
Max. Avalanche Current	@ L = 0.1 mH	I_{AR}	80	A
Single and Repetitive Avalanche Energy	@ I_D = 80 A	E_{AS}	500	mJ
Total Power Dissipation	@ T_C = 25°C	P_D	150	W
Operating & Storage Temperature		T_{OP} & T_{STG}	-55 to +175	°C
Maximum Thermal Resistance (Junction to Case)		$R_{\theta JC}$	0.55 (typ.0.4)	°C/W

NOTES:
*Pulse Test: Pulse Width = 300 µsec, Duty Cycle = 2%.
1/ For ordering information, price, and availability - contact factory.
2/ Screening based on MIL-PRF-19500. Screening flows available on request.
3/ Unless otherwise specified, all electrical characteristics @ 25°C.

SMD1 (S1)

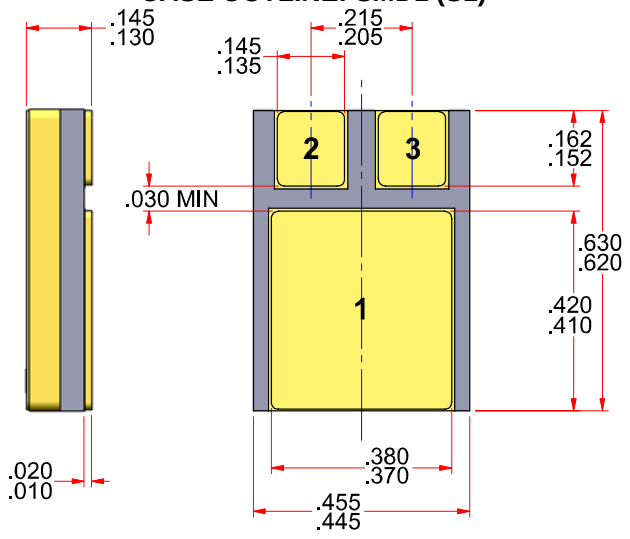


Solid State Devices, Inc.
14701 Firestone Blvd * La Mirada, Ca 90638
Phone: (562) 404-4474 * Fax: (562) 404-1773
ssdi@ssdi-power.com * www.ssdi-power.com

SFF80N20S1

Electrical Characteristics[3/]		Symbol	Min	Typ	Max	Unit
Drain to Source Breakdown Voltage	V_{GS} = 0 V, I_D = 1 mA	BV_{DSS}	200	215	—	**V**
Drain to Source On State Resistance	V_{GS} = 10 V, I_D = 80 A, Tj = 25°C V_{GS} = 10 V, I_D = 80 A, Tj =125°C V_{GS} = 10 V, I_D = 80 A, Tj = 175°C	$R_{DS(on)}$	— — —	15 25 35	20 35 —	**mΩ**
Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = .25 mA, Tj = 25°C V_{DS} = V_{GS}, I_D = .25 mA, Tj = 125°C V_{DS} = V_{GS}, I_D = .25 mA, Tj = -55°C	$V_{GS(th)}$	2.0 1.0 —	3.0 2.1 3.5	4.0 — 5	**V**
Gate to Source Leakage	V_{GS} = ±20 V, Tj = 25°C V_{GS} = ±20 V, Tj = 125°C	I_{GSS}	— —	10 30	±100 —	**nA**
Zero Gate Voltage Drain Current	V_{DS} = 200 V, V_{GS} = 0 V, T_j = 25°C V_{DS} = 200 V, V_{GS} = 0 V, T_j = 125°C V_{DS} = 200 V, V_{GS} = 0 V, T_j = 175°C	I_{DSS}	— — —	0.1 10 250	1 100 —	**µA** **µA** **µA**
Forward Transconductance	V_{DS} = 2.50 V, I_D = 80 A, T_j = 25°C	g_{fs}	50	70	—	**Mho**
Total Gate Charge **Gate to Source Charge** **Gate to Drain Charge**	V_{GS} = 10 V V_{DS} = 100 V I_D = 44 A	Q_g Q_{gs} Q_{gd}	— — —	65 24 13	100 35 20	**nC**
Turn on Delay Time **Rise Time** **Turn off Delay Time** **Fall Time**	V_{GS} = 10 V V_{DS} = 100 V I_D = 44 A R_G = 1.6 Ω, pw= 3 µs	$t_{d(on)}$ t_r $t_{d(off)}$ t_f	— — — —	35 32 65 20	75 65 125 45	**nsec**
Diode Forward Voltage	I_F = 88 A, V_{GS} = 0 V	V_{SD}	—	1.35	1.5	**V**
Diode Reverse Recovery Time **Reverse Recovery Charge**	I_F = 44 A, di/dt = 100 A/µsec	t_{rr} Q_{rr}	— —	160 850	200 —	**nsec** **nC**
Input Capacitance **Output Capacitance** **Reverse Transfer Capacitance**	V_{GS} = 0 V V_{DS} = 100 V f = 1 MHz	C_{iss} C_{oss} C_{rss}	— — —	6200 400 —	— — —	**pF**

CASE OUTLINE: SMD1 (S1)



PIN ASSIGNMENT (Standard)

Package	Drain	Source	Gate
SMD1	Pin 1	Pin 2	Pin 3

NOTES:
*Pulse Test: Pulse Width = 300 µsec, Duty Cycle = 2%.
1/ For ordering information, price, and availability - contact factory.
2/ Screening based on MIL-PRF-19500. Screening flows available on request.
3/ Unless otherwise specified, all electrical characteristics @25°C.