



Solid State Devices, Inc.

14701 Firestone Blvd * La Mirada, Ca 90638

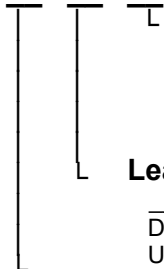
Phone: (562) 404-4474 * Fax: (562) 404-1773

ssdi@ssdi-power.com * www.ssdi-power.com

DESIGNER'S DATA SHEET

Part Number / Ordering Information ^{1/}

SFF13N100



Screening ^{2/}

— = Not Screened

TX = TX Level

TXV = TXV Level

S = S Level

Lead Option ^{3/}

— = Straight Leads

DB = Down Bend

UB = Up Bend

Package ^{3/ 4/}

S1 = SMD1

J = TO-257

M = TO-254

Z = TO-254Z

N = TO-258

P = TO-259

SFF13N100

Series

**13 AMP , 1000 Volts, 340 mΩ
Avalanche Rated
N-Channel MOSFET**

Features:

- Rugged poly-Si gate
- Lowest ON-resistance in the industry
- Avalanche rated
- Hermetically Sealed, Isolated Package
- 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	Unit
Drain – Source Voltage	V_{DSS}	1000	V
Gate – Source Voltage	V_{GS}	± 20 ± 30	V
Continuous Drain Current (T_{OP} limited) @ $T_C = 25^\circ C$	I_{D1}	13	A
Continuous Drain Current (T_{OP} limited) @ $T_C = 100^\circ C$	I_{D2}	8	A
Pulsed Drain Current (P_{width} / T_{OP} limited) @ $T_C = 25^\circ C$	I_{D3}	40	A
Single and Repetitive Avalanche Energy	E_{AS} E_{AR}	650 1	mJ
Total Power Dissipation @ $T_C = 25^\circ C$	P_D	150	W
Operating & Storage Temperature	$T_{OP} \& T_{STG}$	-55 to +150	$^\circ C$
Maximum Thermal Resistance (Junction to Case)	$R_{\theta JC}$	0.83	$^\circ C/W$

SMD1 (S1)

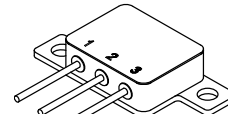
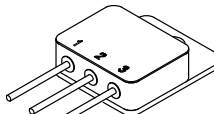
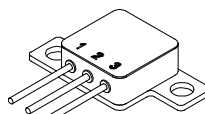
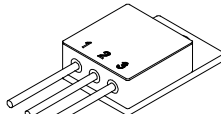
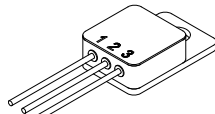
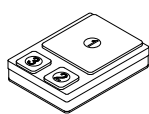
TO-257 (J)

TO-254 (M)

TO-254Z (Z)

TO-258 (N)

TO-259 (P)



NOTES: *Pulse Test: Pulse Width = 300 μ sec, 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/} For lead bending options / pinout configurations - contact factory.

^{4/} Maximum current limited by package configuration.

^{5/} Unless otherwise specified, all electrical characteristics @25 $^\circ C$.

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

DATA SHEET #: FT0063F

DOCX



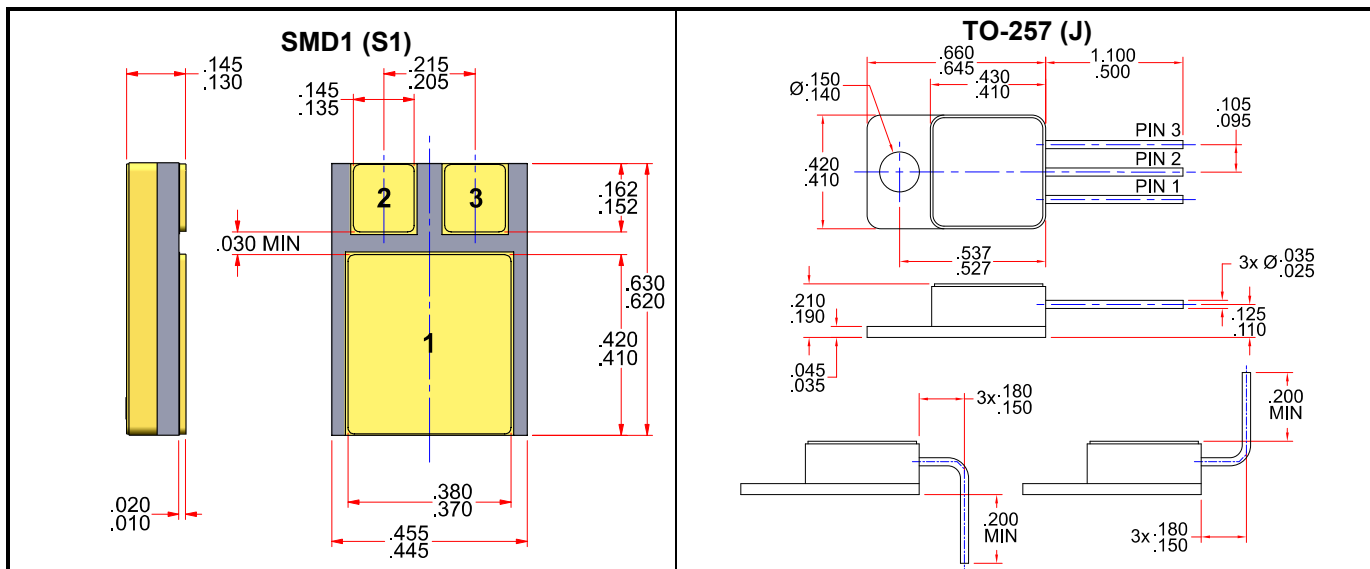
Solid State Devices, Inc.

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

SFF13N100

Series

Electrical Characteristics ^{5/}		Symbol	Min	Typ	Max	Unit
Drain to Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 0.25\text{ mA}$	BV_{DSS}	1000	1030	—	V
Drain to Source On State Resistance $V_{GS} = 10\text{ V}, I_D = 10\text{ A}$	S1 - $T_j = 25^\circ\text{C}$	$R_{DS(on)}$	—	300	340	mΩ
	J, M, Z, N, P - $T_j = 25^\circ\text{C}$		—	360	400	
	S1 - $T_j = 150^\circ\text{C}$		—	830	—	
	J, M, Z, N, P - $T_j = 150^\circ\text{C}$		—	900	—	
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 1\text{ mA}, T_j = 25^\circ\text{C}$	$V_{GS(th)}$	2.5	3.0	3.5	V
	$V_{DS} = V_{GS}, I_D = 1\text{ mA}, T_j = 125^\circ\text{C}$		1.5	2.0	—	
	$V_{DS} = V_{GS}, I_D = 1\text{ mA}, T_j = -55^\circ\text{C}$		—	4.0	4.5	
Gate to Source Leakage	$V_{GS} = \pm 20\text{ V}, T_j = 25^\circ\text{C}$	I_{GSS}	—	1	± 100	nA
	$V_{GS} = \pm 20\text{ V}, T_j = 125^\circ\text{C}$		—	10	—	
Zero Gate Voltage Drain Current	$V_{DS} = 900\text{ V}, V_{GS} = 0\text{ V}, T_j = 25^\circ\text{C}$	I_{DSS}	—	0.01	2	μA
	$V_{DS} = 900\text{ V}, V_{GS} = 0\text{ V}, T_j = 150^\circ\text{C}$		—	6	150	μA
Total Gate Charge	$V_{GS} = 10\text{ V}$	Q_g	—	95	150	nC
Gate to Source Charge	$V_{DS} = 150\text{ V}$	Q_{gs}	—	12	25	
Gate to Drain Charge	$I_D = 10\text{ A}$	Q_{gd}	—	38	60	
Turn on Delay Time	$V_{GS} = 10\text{ V}$	$t_{d(on)}$	—	35	75	nsec
Rise Time	$V_{DS} = 150\text{ V}$	t_r	—	17	25	
Turn off Delay Time	$I_D = 10\text{ A}$	$t_{d(off)}$	—	130	200	
Fall Time		t_f	—	13	40	
Diode Forward Voltage $I_F = 10\text{ A}, V_{GS} = 0\text{ V}$	S1	V_{SD}	—	0.88	1.1	V
	J, M, Z, N, P		—	1.00	1.2	
Diode Reverse Recovery Time Reverse Recovery Charge	$I_F = 10\text{ A}, di/dt = 100\text{ A}/\mu\text{sec}$	t_{rr}	—	400	600	nsec
	$I_F = 10\text{ A}, di/dt = 100\text{ A}/\mu\text{sec}$	I_{rm}	—	27	—	A
	$I_F = 10\text{ A}, di/dt = 100\text{ A}/\mu\text{sec}$	Q_{rr}	—	5.5	—	μC
Input Capacitance	$V_{GS} = 0\text{ V}$	C_{iss}	—	2500	—	pF
Output Capacitance	$V_{DS} = 50\text{ V}$	C_{oss}	—	290	—	
Reverse Transfer Capacitance	$f = 1\text{ MHz}$	C_{rss}	—	—	—	



PIN ASSIGNMENT (Standard)			
Package	Drain	Source	Gate
SMD1 (S1)	Pin 1	Pin 2	Pin 3
TO-257 (J)	Pin 1	Pin 2	Pin 3

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

DATA SHEET #: FT0063F

DOCX



Solid State Devices, Inc.

14701 Firestone Blvd * La Mirada, Ca 90638

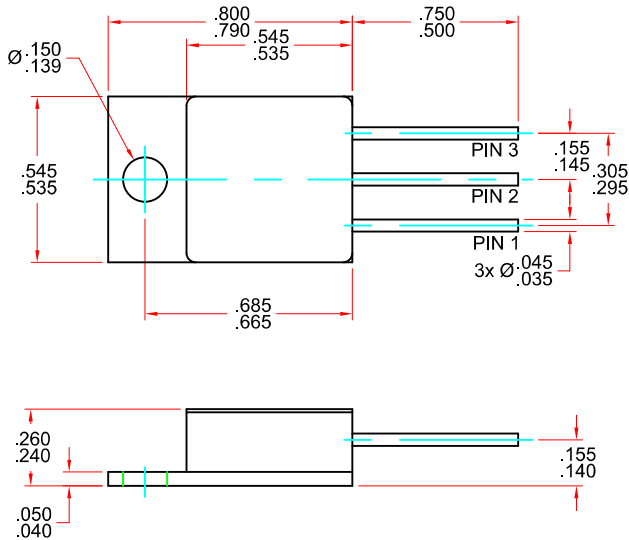
Phone: (562) 404-4474 * Fax: (562) 404-1773

ssdi@ssdi-power.com * www.ssdi-power.com

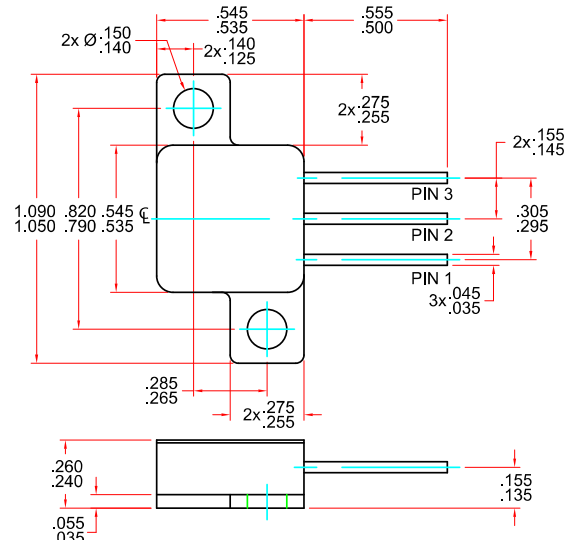
SFF13N100

Series

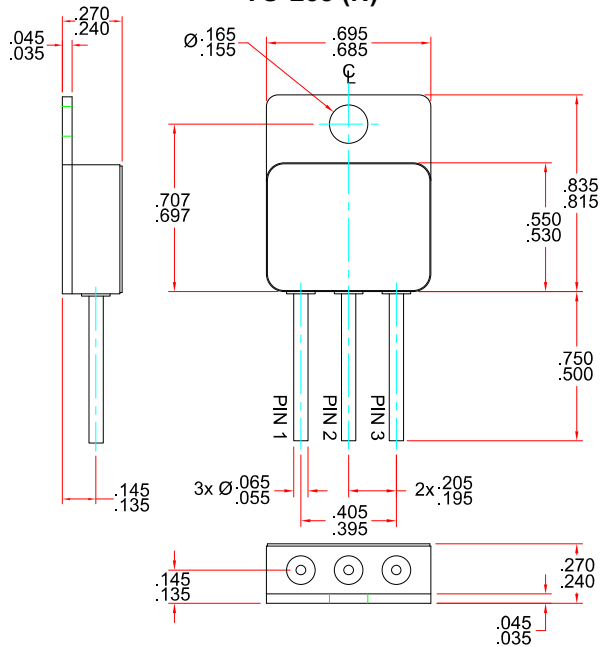
TO-254 (M)



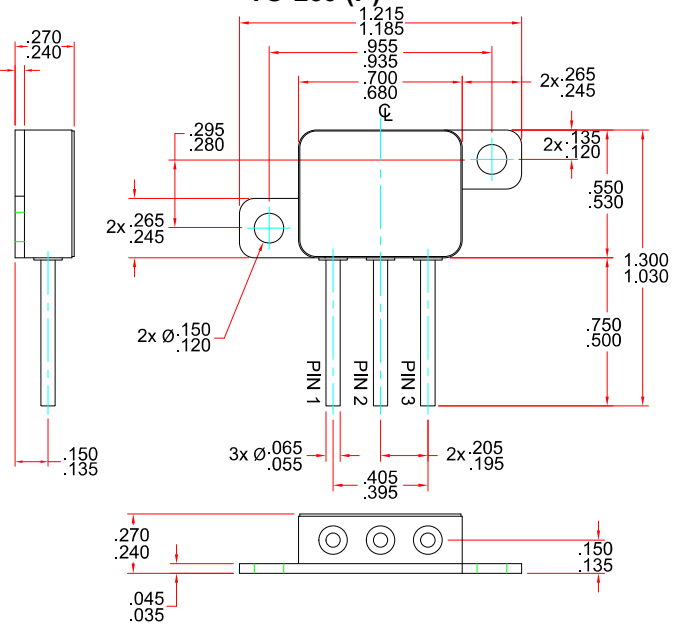
TO-254Z (Z)



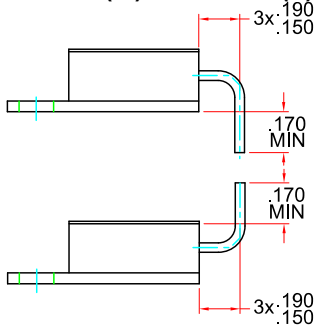
TO-258 (N)



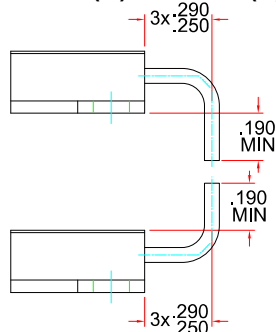
TO-259 (P)



Lead Bend Options for TO-254 (M) / TO-254Z (Z)



Lead Bend Options for TO-258 (N) / TO-259 (P)



PIN ASSIGNMENT (Standard)

Package	Drain	Source	Gate
TO-254 (M)	Pin 1	Pin 2	Pin 3
TO-254Z (Z)	Pin 1	Pin 2	Pin 3
TO-258 (N)	Pin 1	Pin 2	Pin 3
TO-259 (P)	Pin 1	Pin 2	Pin 3

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

DATA SHEET #: FT0063F

DOCX