



Solid State Devices, Inc.

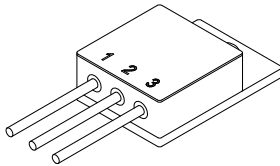
14701 Firestone Blvd * La Mirada, Ca 90638
 Phone: (562) 404-4474 * Fax: (562) 404-1773
 ssdi@ssdi-power.com * www.ssdi-power.com

SFF44N50M SFF44N50Z

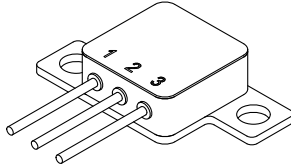
25 AMP, 500 Volts, 110 mΩ Avalanche Rated N-channel MOSFET

DESIGNER'S DATA SHEET

TO-254



TO-254Z

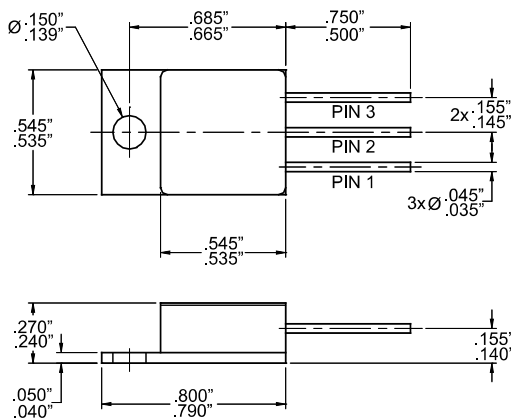


Note 1: maximum current limited by package configuration

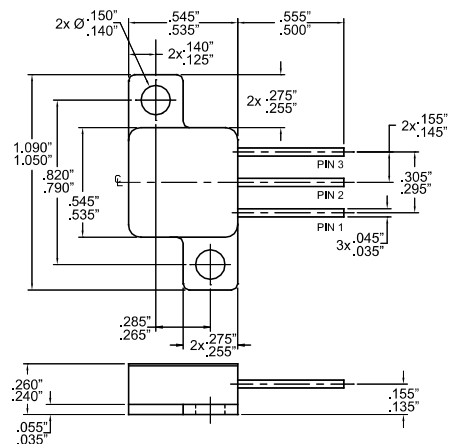
- Features:**
- Rugged poly-Si gate
 - Lowest ON-resistance in the industry
 - Avalanche rated
 - Hermetically Sealed, Isolated Package
 - Low Total Gate Charge
 - Fast Switching
 - TX, TXV, S-Level screening available
 - Improved ($R_{DS(ON)}$ Q_G) figure of merit

Maximum Ratings		Symbol	Value	Units
Drain - Source Voltage		V_{DSS}	500	V
Gate - Source Voltage	continuous transient	V_{GS}	± 20 ± 30	V
Max. Continuous Drain Current (package limited)	@ $T_C = 25^\circ C$ @ $T_C = 125^\circ C$	I_{D1} I_{D2}	25 12	A
Max. Instantaneous Drain Current (T_j limited)	@ $T_C = 25^\circ C$	I_{D3}	35	A
Max. Avalanche current	@ $L = 0.1$ mH	I_{AR}	20	A
Single / Repetitive Avalanche Energy	@ $L = 0.1$ mH	E_{AS} / E_{AR}	1100 / 1	mJ
Total Power Dissipation	@ $T_C = 25^\circ C$	P_D	125	W
Operating & Storage Temperature		$T_{OP} \& T_{STG}$	-55 to +150	$^\circ C$
Maximum Thermal Resistance (Junction to Case)		R_{jc}	1.0 (typ.0.75)	$^\circ C / W$

**TO254
(M)**



**TO254Z
(Z)**



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

DATA SHEET #: FT0030A

DOC



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SFF44N50M

SFF44N50Z

Electrical Characteristics ^{4/}	Symbol	Min	Typ	Max	Units
Drain to Source Breakdown Voltage $V_{GS} = 0V, I_D = 250\mu A$	BV_{DSS}	500	530	—	V
Drain to Source On State Resistance $V_{GS} = 10V, I_D = 20A, T_j = 25^\circ C$ $V_{GS} = 10V, I_D = 12A, T_j = 125^\circ C$ $V_{GS} = 10V, I_D = 20A, T_j = 150^\circ C$	R_{DS(on)}	—	100 230 270	110 — —	mΩ
Gate Threshold Voltage $V_{DS} = V_{GS}, I_D = 1.8mA, T_j = 25^\circ C$ $V_{DS} = V_{GS}, I_D = 250\mu A, T_j = 25^\circ C$ $V_{DS} = V_{GS}, I_D = 250\mu A, T_j = -55^\circ C$ $V_{DS} = V_{GS}, I_D = 250\mu A, T_j = 125^\circ C$	V_{GS(th)}	2.1 — — —	3.0 2.7 3.2 1.9	3.9 — — —	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 $V_{DS} = 500V, V_{GS} = 0V, T_j = 25^\circ C$ $V_{DS} = 500V, V_{GS} = 0V, T_j = 125^\circ C$ $V_{DS} = 500V, V_{GS} = 0V, T_j = 150^\circ C$	I_{DSS}	— — —	0.01 2.0 10	25 — 250	μA μA μA
Forward Transconductance $V_{DS} = 10V, I_D = 20A, T_j = 25^\circ C$	g_{fs}	10	30	—	Mho
Total Gate Charge $V_{GS} = 10V$	Q_g	—	175	—	nC
Gate to Source Charge $V_{DS} = 380V$	Q_{gs}	—	28	—	nC
Gate to Drain Charge $I_D = 32A$	Q_{gd}	—	80	—	nC
Turn on Delay Time $V_{GS} = 10V$	t_{d(on)}	—	30	—	nsec
Rise Time $V_{DS} = 380V$	t_r	—	10	—	
Turn off Delay Time $I_D = 32A$	t_{d(off)}	—	70	—	
Fall Time $R_G = 2.7\Omega, pw = 3\mu s$	t_f	—	10	—	
Diode Forward Voltage $I_F = 32A, V_{GS} = 0V$	V_{SD}	—	1.0	1.5	V
Diode Reverse Recovery Time $I_F = 32A, di/dt = 100A/\mu sec$	t_{rr}	—	540	—	nsec
Peak Reverse Recovery Current	I_{RM(rec)}	—	45	—	A
Reverse Recovery Charge	Q_{rr}	—	12	—	μC
Input Capacitance $V_{GS} = 0V$	C_{iss}	—	4500	—	pF
Output Capacitance $V_{DS} = 25V$	C_{oss}	—	540	—	
Reverse Transfer Capacitance $f = 1 MHz$	C_{rss}	—	100	—	

NOTES:

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

1/ For Ordering Information, Price, and Availability Contact Factory.

2/ Screening per MIL-PRF-19500.

3/ For Package Outlines / lead bending options / pinout configurations Contact Factory.

4/ Unless Otherwise Specified, All Electrical Characteristics @25°C.

Available Part Numbers:

Consult Factory

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