



**Solid State Devices, Inc.**

14830 Valley View Blvd \* La Mirada, Ca 90638

Phone: (562) 404-7855 \* Fax: (562) 404-1773

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

# SFF35N20M SFF35N20Z

## DESIGNER'S DATA SHEET

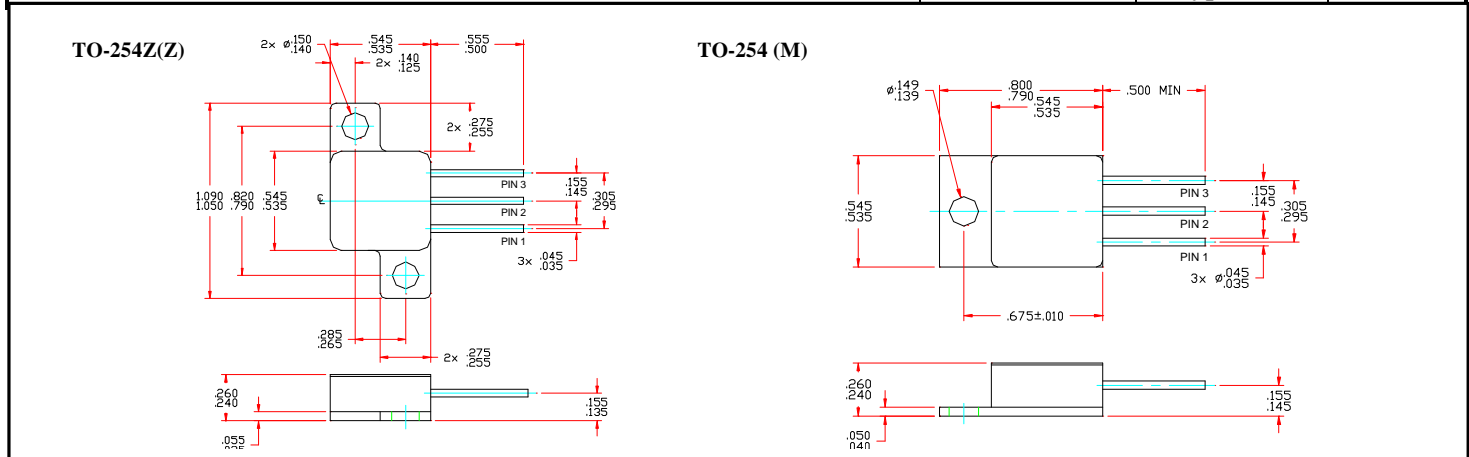
**TO-254 and TO-254Z**

**note 1: Drain Current is package limited**

**55 AMP (note 1) /200 Volts  
35 mO  
N-Channel Trench Gate  
MOSFET**

- Features:**
- TRENCH GATE technology
  - Lowest ON-resistance in the industry
  - UIS rated
  - Hermetically Sealed, Isolated Power Package
  - Low Total Gate Charge
  - Fast Switching
  - TX, TXV, S-Level screening available
  - Improved ( $R_{DS(ON)}$ ,  $Q_G$ ) figure of merit
  - Enhanced replacement for IRHM250 types

Maximum Ratings	Symbol	Value	Units
Drain - Source Voltage	$V_{DSS}$	200	V
Gate – Source Voltage	$V_{GS}$	$\pm 20$	V
Max. Continuous Drain Current (junction temperature limited)	$I_{D1}$	85	A
	$I_{D2}$	12	A
Max. Continuous Drain Current (package limited)	$I_{D3}$	55	A
Max. Avalanche current	$I_{AR}$	35	A
Repetitive Avalanche Energy	$E_{AR}$	60	mJ
Total Power Dissipation	$P_D$	210	W
Operating & Storage Temperature	$T_{OP}$ & $T_{STG}$	-55 to +175	$^{\circ}C$
Maximum Thermal Resistance (Junction to Case)	$R_{\theta JC}$	0.7 (typ 0.55)	$^{\circ}C/W$



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

**DATA SHEET #: FT0018A** [www.DataSheet4U.com](http://www.DataSheet4U.com)



**Solid State Devices, Inc.**

14830 Valley View Blvd \* La Mirada, Ca 90638

Phone: (562) 404-7855 \* Fax: (562) 404-1773

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

# SFRC35N20M

# SFRC35N20Z

Electrical Characteristics <sup>4/</sup>		Symbol	Min	Typ	Max	Units
<b>Drain to Source Breakdown Voltage</b>	$V_{GS} = 0V, I_D = 250\mu A$	$BV_{DSS}$	200	—	—	V
<b>Drain to Source On State Resistance</b>	$V_{GS} = 10V, I_D = 30A, T_j = 25^\circ C$ $V_{GS} = 10V, I_D = 30A, T_j = 125^\circ C$ $V_{GS} = 10V, I_D = 30A, T_j = 175^\circ C$	$R_{DS(on)}$	—	26 51 67	35.0 — —	mO
<b>Gate Threshold Voltage</b>	$V_{DS} = V_{GS}, I_D = 250\mu A$	$V_{GS(th)}$	2.0	—	4.0	V
<b>Gate to Source Leakage</b>	$V_{GS} = \pm 20V$	$I_{GSS}$	—	—	$\pm 100$	nA
<b>Zero Gate Voltage Drain Current</b>	$V_{DS} = 200V, V_{GS} = 0V, T_j = 25^\circ C$ $V_{DS} = 200V, V_{GS} = 0V, T_j = 125^\circ C$ $V_{DS} = 200V, V_{GS} = 0V, T_j = 175^\circ C$	$I_{DSS}$	—	—	1 50 250	$\mu A$ $\mu A$ $\mu A$
<b>Forward Transconductance</b>	$V_{DS} = 10V, I_D = 30A, T_j = 25^\circ C$	$g_{fs}$	23	—	—	Mho
<b>Total Gate Charge</b>	$V_{GS} = 10V$	$Q_g$	—	90	135	nC
<b>Gate to Source Charge</b>	$V_{DS} = 100V$	$Q_{gs}$	—	25	—	
<b>Gate to Drain Charge</b>	$I_D = 65A$	$Q_{gd}$	—	35	—	
<b>Turn on Delay Time</b>	$V_{GS} = 10V$	$t_{d(on)}$	—	25	40	nsec
<b>Rise Time</b>	$V_{DS} = 100V$	$t_r$	—	225	340	
<b>Turn off Delay Time</b>	$I_D = 65A$	$t_{d(off)}$	—	50	75	
<b>Fall Time</b>	$R_G = 2.5\Omega \text{ min}$	$t_f$	—	200	300	
<b>Diode Forward Voltage</b>	$I_F = 65A, V_{GS} = 0V$	$V_{SD}$	—	1.0	1.50	V
<b>Diode Reverse Recovery Time</b>	$I_F = 50A, di/dt = 100A/\mu sec$	$t_{rr}$	—	140	220	nsec
<b>Peak Reverse Recovery Current</b>		$I_{RM(rec)}$	—	8	12.5	A
<b>Reverse Recovery Charge</b>		$Q_{rr}$	—	0.55	1.3	$\mu C$
<b>Input Capacitance</b>	$V_{GS} = 0V$	$C_{iss}$	—	5100	—	pF
<b>Output Capacitance</b>	$V_{DS} = 25V$	$C_{oss}$	—	480	—	
<b>Reverse Transfer Capacitance</b>	$f = 1 \text{ MHz}$	$C_{rss}$	—	210	—	

#### NOTES:

\* Pulse Test: Pulse Width = 300 $\mu$ sec, 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

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

**DATA SHEET #:** FT0018A [www.DataSheet4U.com](http://www.DataSheet4U.com)