



PRELIMINARY

SOLID STATE DEVICES, INC.

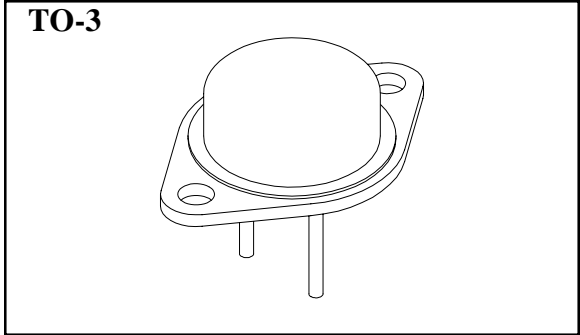
14830 Valley View Av. \* La Mirada, Ca 90670  
Phone: (562) 404-7855 \* Fax: (562) 404-1773

**DESIGNER'S DATA SHEET**

- FEATURES:**
- Rugged construction with polysilicon gate
  - Low RDS (on) and high transconductance
  - Excellent high temperature stability
  - Very fast switching speed
  - Fast recovery and superior dv/dt performance
  - Increased reverse energy capability
  - Low input and transfer capacitance for easy paralleling
  - Hermetically sealed package
  - TX, TXV, and Space Level screening available
  - Replaces: SMM40N20 Type

**SFF1310M**  
**SFF1310Z**

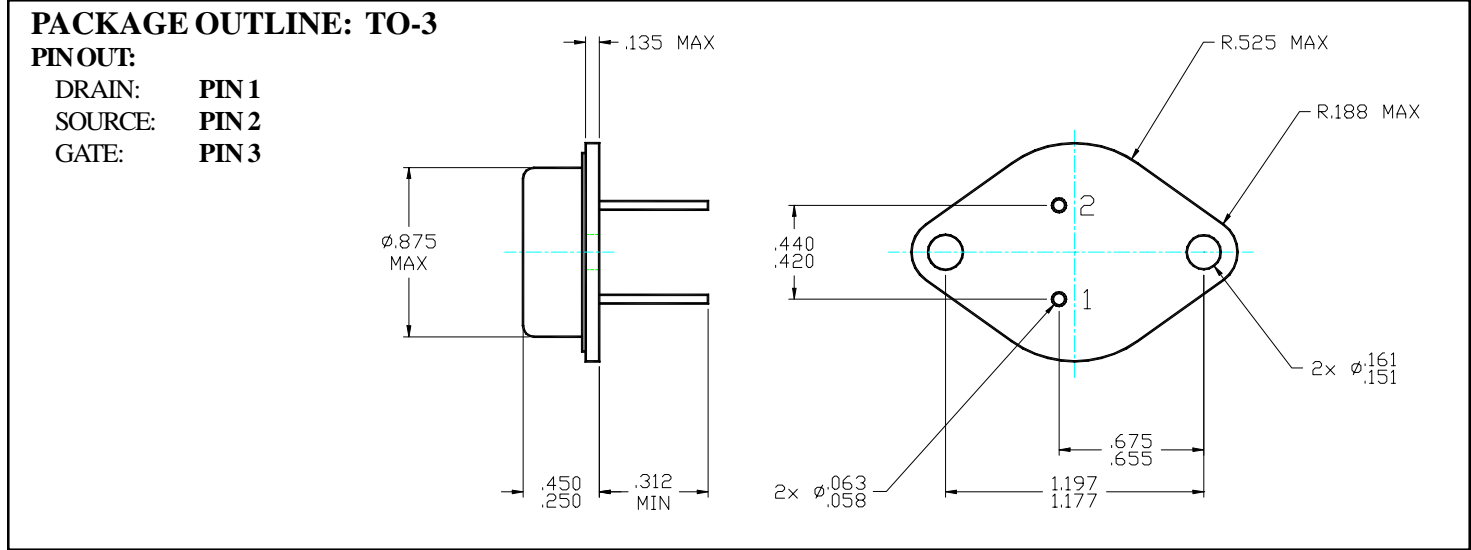
**40 AMPS**  
**200 VOLTS**  
**0.050 Ω**  
**N-CHANNEL**  
**POWER MOSFET**



**MAXIMUM RATINGS**

CHARACTERISTIC	SYMBOL	VALUE	UNIT
Drain to Source Voltage	V <sub>DS</sub>	200	Volts
Gate to Source Voltage	V <sub>GS</sub>	±20	Volts
Continuous Drain Current	I <sub>D</sub>	40	Amps
Operating and Storage Temperature	T <sub>op</sub> & T <sub>stg</sub>	-55 to +150	°C
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	0.5	°C/W
Total Device Dissipation	P <sub>D</sub>	250 190	Watts

@ TC = 25°C  
@ TC = 55°C



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

**DATA SHEET #: FT0004A**

**SFF1310M**  
**SFF1310Z**

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**ELECTRICAL CHARACTERISTICS @  $T_J=25^{\circ}\text{C}$  (Unless Otherwise Specified)**

RATING		SYMBOL	MIN	TYP	MAX	UNIT
<b>Drain to Source Breakdown Voltage</b> (VGS = 0 V, ID = 250 $\mu$ A)		<b>BV<sub>DSS</sub></b>	200	-	-	<b>V</b>
<b>Drain to Source ON State Resistance</b> (VGS = 10 V, 60% of Rated ID)	$I_D = 37.5\text{A}$	<b>R<sub>DSON</sub></b>	- -	- -	0.050	$\Omega$
<b>ON State Drain Current</b> (VDS > ID(on) x RDS(on) Max, VGS = 10 V)		<b>ID(on)</b>	50	-	-	<b>A</b>
<b>Gate Threshold Voltage</b> (VDS = VGS, ID = 4mA)		<b>VGS(th)</b>	2.0	-	4.0	<b>V</b>
<b>Forward Transconductance</b> (VDS > ID(on) x RDS (on) Max, IDS = 50% rated ID)		<b>gfs</b>	20	25	-	<b>S(O)</b>
<b>Zero Gate Voltage Drain Current</b> (VGS = 0V) $V_{DS} = \text{max rated Voltage, } T_A = 25^{\circ}\text{C}$ $V_{DS} = 80\% \text{ rated } V_{DS}, T_A = 125^{\circ}\text{C}$		<b>IDSS</b>	- -	- -	250 1000	$\mu\text{A}$
<b>Gate to Source Leakage Forward</b> <b>Gate to Source Leakage Reverse</b>	At rated VGS	<b>IGSS</b>	- -	- -	+100 -100	<b>nA</b>
<b>Total Gate Charge</b>	VGS = 10 V	<b>Qg</b>	-	190	220	<b>nC</b>
<b>Gate to Source Charge</b>	50% rated VDS	<b>Qgs</b>	-	35	50	
<b>Gate to Drain Charge</b>	50% rated ID	<b>Qgd</b>	-	95	120	
<b>Turn on Delay Time</b>	VDD = 50%	<b>td(on)</b>	-	28	35	<b>nsec</b>
<b>Rise Time</b>	rated VDS	<b>tr</b>	-	38	40	
<b>Turn off DELAY Time</b>	50% rated ID	<b>td(off)</b>	-	110	130	
<b>Fall Time</b>	RG = 6.2 $\Omega$	<b>tf</b>	-	30	35	
<b>Diode Forward Voltage</b> (IS = rated ID, VGS = 0V, TJ = 25°C)		<b>VSD</b>	-	-	1.50	<b>V</b>
<b>Diode Reverse Recovery Time</b>	$T_J = 25^{\circ}\text{C}$	<b>trr</b>	-	-	225	<b>nsec</b>
<b>Reverse Recovery Charge</b>	IF = 10A di/dt = 100A/ $\mu\text{sec}$	<b>QRR</b>	-	1.5	-	$\mu\text{C}$
<b>Input Capacitance</b>	VGS = 0 Volts	<b>Ciss</b>	-	4400	-	<b>pF</b>
<b>Output Capacitance</b>	VDS = 25 Volts	<b>Coss</b>	-	800	-	
<b>Reverse Transfer Capacitance</b>	f = 1 MHz	<b>Crss</b>	-	285	-	

NOTES: