



**Solid State Devices, Inc.**

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**DESIGNER'S DATA SHEET**

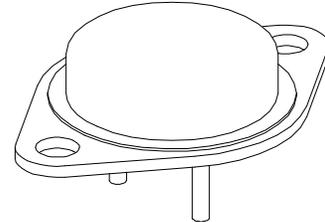
**Features:**

- Rugged Construction with Polysilicon Gate Cell
- Low  $R_{DS(ON)}$  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 Surface Mount Power Package
- TX, TXV, Space Level Screening Available
- Replacement for IXTH24N50 Types

**SFF24N50/3**  
**SFF24N50/3T**

**24 AMP / 500 Volts**  
**0.2 W**  
**N-Channel**  
**Power MOSFET**

TO-3



Maximum Ratings		Symbol	Value	Units
Drain – Source Voltage		$V_{DS}$	500	Volts
Gate – Source Voltage		$V_{GS}$	$\pm 20$	Volts
Continuous Drain Current ( $T_j$ limited)		$I_D$	24	Amps
Avalanche Current	Repetitive	$I_{AR}$	21	Amps
Avalanche Energy	Repetitive Single Pulse	$E_{AR}$ $E_{AS}$	1 690	mJ
Operating & Storage Temperature		Top & Tstg	-55 to +150	$^{\circ}C$
Thermal Resistance, Junction to Case		$R_{qJC}$	0.75 (typ 0.6)	$^{\circ}C/W$
Total Device Dissipation @ $TC=25^{\circ}C$		PD	167	WATTS
Total Device Dissipation @ $TC=55^{\circ}C$			126	

**Package Outline: TO-3**

**Pin Out:**

**Pin 1: GATE**

**Pin 2: SOURCE**

**Pin 3: DRAIN**

**Notes:**

1. P/N: SFF 24N50/3:

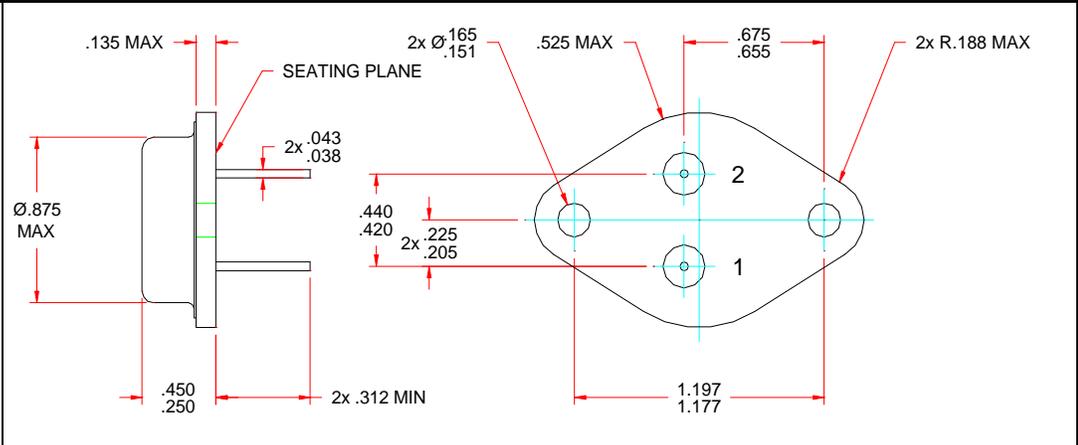
Pin Diameter : 0.043"

0.038"

2. P/N: SFF24N50/3T:

Pin Diameter: 0.063"

0.058"



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

**DATA SHEET #: F00175E**

**DOC**



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# SFF24N50/3 SFF24N50/3T

Electrical Characteristics @ T <sub>J</sub> = 25°C (Unless Otherwise Specified)		Symbol	Min	Typ	Max	Units
Drain to Source Breakdown Voltage (VGS=0 V, ID=250 μA)		BV <sub>DSS</sub>	500	—	—	Volts
Drain to Source On State Resistance (VGS=10 V, ID=50% Rated ID)		R <sub>DS(on)</sub>	—	—	0.2	W
On State Drain Current (VDS>ID(on) X RDS(on) Max, VGS=10V)		I <sub>D(on)</sub>	24	—	—	A
Gate Threshold Voltage (VDS=VGS, ID= 4mA)		V <sub>GS(th)</sub>	2.0	—	4.0	V
Forward Transconductance (VDS>ID(on) X RDS(on) Max, IDS= 50% Rated ID)		g <sub>fs</sub>	8	12	—	mho
Zero Gate Voltage Drain Current (VDS=max rated voltage, VGS=0 V) (VDS=80% rated VDS, VGS=0 V, TA=125°C)		I <sub>DSS</sub>	—	—	250 1000	mA
Gate to Source Leakage Forward Gate to Source Leakage Reverse	At rated VGS	I <sub>GSS</sub>	—	—	+100 -100	nA
Total Gate Charge	VGS=10 Volts	Q <sub>g</sub>	—	135	180	nC
Gate to Source Charge	50% rated VDS	Q <sub>gs</sub>	—	28	40	
Gate to Drain Charge	50% Rated ID	Q <sub>gd</sub>	—	62	85	
Turn on Delay Time	VDD=50% Rated VDS	t <sub>d(on)</sub>	—	16	30	nsec
Rise Time	50% Rated ID	t <sub>r</sub>	—	33	45	
Turn on Delay Time	RG= 6.2Ω	t <sub>d(off)</sub>	—	65	130	
Fall Time	VGS=10 Volts	t <sub>f</sub>	—	30	40	
Diode Forward Voltage (IS= Rated ID, VGS=0 V, T <sub>J</sub> =25°C)		V <sub>SD</sub>	—	—	1.5	V
Diode Reverse Recovery Time	T <sub>J</sub> =25°C	t <sub>rr</sub>	—	—	500	nsec
Reverse Recovery Charge	IF=10A Di/dt=100A/μsec	Q <sub>RR</sub>	—	—	—	nC
Input Capacitance	VGS=0 Volts	C <sub>iss</sub>	—	4200	—	pF
Input Capacitance	VDS=25 Volts	C <sub>oss</sub>	—	450	—	
Reverse Transfer Capacitance	f=1 MHz	C <sub>rss</sub>	—	135	—	

For thermal derating curves and other characteristics please contact SSDI Marketing Department.

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