



Solid State Devices, Inc.

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SFF35N50/3 - SFF35N70/3 Series

DESIGNER'S DATA SHEET

Part Number / Ordering Information ^{1/}

SFF 35 N — /3 —

Screening ^{2/}

— = Not Screened

TX = TX Level

TXV = TXV Level

S = S Level

Package

/3 = TO-3

/3T = TO-3T (high current)

Voltage

50 = 500 Volts

60 = 600 Volts

70 = 700 Volts

^L **Current** 35 = 35 Amp

35 AMP

N-Channel Power MOSFET

500 - 700 Volts, 0.09 Ω

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/Enhancement for IXTH24N50 Types

Maximum Ratings		Symbol	Value	Unit
Drain – Source Voltage	SFF35N50	V _{DS}	500	V
	SFF35N60		600	
	SFF35N70		700	
Gate – Source Voltage	Continuous transient	V _{GS}	±20 ±30	V
Continuous Drain Current (Top limited)	@ T _C = 25°C	I _D	35	A
	@ T _C = 100°C		22	
Avalanche Current	Repetitive	I _{AR}	21	A
Avalanche Energy	Repetitive	E _{AR}	1.5	mJ
	Single Pulse	E _{AS}	1100	
Operating & Storage Temperature		T _{OP} & T _{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case		R _{θJC}	0.5 (typ 0.3)	°C/W
Total Device Dissipation @ T _C = 25°C		P _D	250	W
Total Device Dissipation @ T _C = 55°C			190	

NOTES:

^{1/} For ordering information, price, and availability - contact factory.

^{2/} Screening based on MIL-PRF-19500. Screening flows available on request.

^{3/} Unless otherwise specified, all electrical characteristics @ $25^\circ C$.

TO-3 (/3)



*Dime used for size reference

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

DATA SHEET #: F00175G

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Electrical Characteristics ^{3/}	Symbol	Min	Typ	Max	Unit
Drain to Source Breakdown Voltage $V_{GS} = 0\text{ V}, I_D = 1\text{ mA}$	BV_{DSS}	500 600 700	— — 740	— — —	V
Drain to Source On State Resistance $V_{GS} = 10\text{ V}, I_D = 18\text{ A}, T_J = 25^\circ\text{C}$ $V_{GS} = 10\text{ V}, I_D = 18\text{ A}, T_J = 125^\circ\text{C}$	$R_{DS(on)}$	— —	80 160	90 —	mΩ
Gate Threshold Voltage $V_{DS} = V_{GS}, I_D = 1.75\text{ mA}, T_J = 25^\circ\text{C}$ $V_{DS} = V_{GS}, I_D = 1.75\text{ mA}, T_J = 125^\circ\text{C}$ $V_{DS} = V_{GS}, I_D = 1.75\text{ mA}, T_J = -55^\circ\text{C}$	$V_{GS(th)}$	3.5 2.5 —	4.2 3.4 4.7	4.5 — 5.5	V
Gate to Source Leakage $V_{GS} = \pm 20\text{ V}, T_J = 25^\circ\text{C}$ $V_{GS} = \pm 20\text{ V}, T_J = 125^\circ\text{C}$	I_{GSS}	— —	10 30	± 100 —	nA
Zero Gate Voltage Drain Current $V_{DS} = 650\text{ V}, V_{GS} = 0\text{ V}, T_J = 25^\circ\text{C}$ $V_{DS} = 650\text{ V}, V_{GS} = 0\text{ V}, T_J = 125^\circ\text{C}$	I_{DSS}	— —	1 15	25 150	μA
Total Gate Charge $V_{GS} = 10\text{ V}$ Gate to Source Charge $V_{DS} = 480\text{ V}$ Gate to Drain Charge $I_D = 27\text{ A}$	Q_g Q_{gs} Q_{gd}	— — —	170 35 90	250 65 120	nC
Turn on Delay Time $V_{GS} = 13\text{ V}$ Rise Time $V_{DS} = 400\text{ V}$ Turn on Delay Time $I_D = 27\text{ A}$ Fall Time $R_G = 1.8\text{ }\Omega, pw = 3\text{ }\mu s$	$t_{d(on)}$ t_r $t_{d(off)}$ t_f	— — — —	40 15 170 15	75 25 250 50	nsec
Diode Forward Voltage $I_F = 27\text{ A}, V_{GS} = 0\text{ V}$	V_{SD}	—	1.0	1.2	V
Diode Reverse Recovery Time $I_F = 10\text{ A}, di/dt = 100\text{ A}/\mu\text{sec}$ Reverse Recovery Charge $I_F = 10\text{ A}, di/dt = 100\text{ A}/\mu\text{sec}$	t_{RR} I_{RM} Q_{RR}	— — —	130 — —	250 — —	nsec A μC
Input Capacitance $V_{GS} = 0\text{ V}$ Input Capacitance $V_{DS} = 100\text{ V}$ Reverse Transfer Capacitance $f = 1\text{ MHz}$	C_{iss} C_{oss} C_{rss}	— — —	5070 2710 105	7400 2900 120	pF

Package Outline: TO-3

Pin Out:

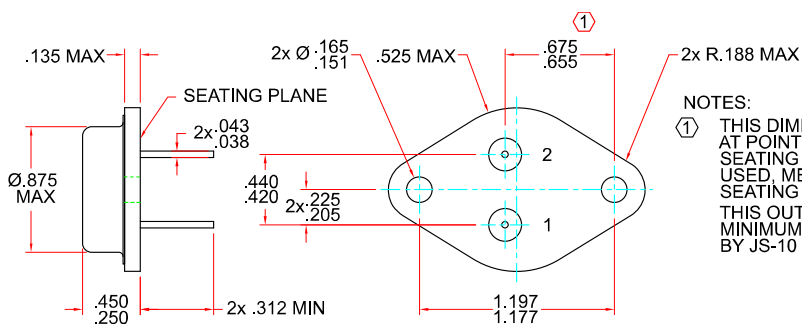
Pin 1: GATE

Pin 2: SOURCE

Pin 3: DRAIN

Notes:

- P/N: SFF 24N50/3:
Pin Diameter : 0.043"
0.038"
- P/N: SFF24N50/3T:
Pin Diameter: 0.063"
0.058"



NOTES:

- THIS DIMENSION SHALL BE MEASURED AT POINTS .050 - .055" BELOW THE SEATING PLANE. WHEN GAGE IS NOT USED, MEASUREMENT WILL BE MADE AT SEATING PLANE. THIS OUTLINE DOES NOT MEET THE MINIMUM CRITERIA ESTABLISHED BY JS-10 FOR REGISTRATION.

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

NOTES:

- For ordering information, price, and availability - contact factory.
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