



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

DESIGNER'S DATA SHEET

Part Number / Ordering Information ^{1/}

SFF40N60

Screening ^{2/} = Not Screened
 TX = TX Level
 TXV = TXV Level
 S = S Level

 Lead Option = Straight Leads
 DB = Down Bend
 UB = Up Bend

 Package N = TO-258
 P = TO-259

SFF40N60N

SFF40N60P

40 AMP / 600 Volts
Typ 40 mΩ
N-Channel POWER MOSFET

Features:

- Rugged Construction with Polysilicon Gate
- Very 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, Isolated Surface Mount Power Package
- Ceramic Seals for Improved Hermeticity
- TX, TXV, S-Level screening available

Maximum Ratings	Symbol	Value	Units
Drain – Source Voltage	V_{DS}	600	Volts
Gate – Source Voltage	V_{GS}	±20	Volts
Continuous Drain Current	I_D	40	Amps
Avalanche Energy, repetitive Avalanche energy, single pulse	E_{AR} E_{AS}	3 1900	mJ
Power Dissipation $T_C = 25^\circ\text{C}$ $T_C = 55^\circ\text{C}$	P_D	150 114	W
Operating & Storage Temperature	Top & Tstg	-55 to +150	°C
Maximum Thermal Resistance Junction to Case	$R_{\theta JC}$	0.83	°C/W

NOTES:

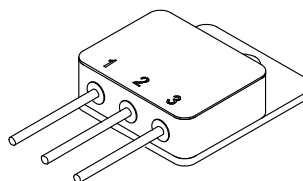
* Pulse test: pulse width = 300μsec, duty cycle = 2%

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

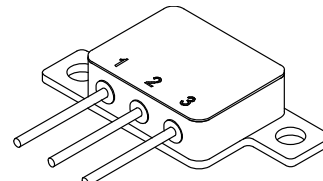
^{2/} Screening based on MIL-PRF-19500. Screening flows available on request.

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

TO-258 (N)



TO-259 (P)



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

DATA SHEET #: FT0059A

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SFF40N60N

SFF40N60P

Electrical Characteristics ^{3/}		Symbol	Min	Typ	Max	Units
Drain to Source Breakdown Voltage ($V_{GS} = 0V$, $I_D = 250\mu A$)		BV_{DSS}	600	650	—	Volts
Drain to Source On State Resistance ($V_{GS} = 10V$)		$I_D = 25A$ $I_D = 15A$ $I_D = 15A, 125^\circ C$	$R_{DS(on)1}$ $R_{DS(on)2}$ $R_{DS(on)3}$	— 40 40 80	50 — —	$m\Omega$
Gate Threshold Voltage ($V_{DS} = V_{GS}$, $I_D = 4mA$)		$T_A = 25^\circ C$ $T_A = 125^\circ C$ $T_A = -55^\circ C$	$V_{GS(th)}$	2.0 1.0 —	3.0 2.2 3.3 4.0 — 5.0	V
Gate to Source Leakage (At Rated V_{GS})			I_{GSS}	—	—	± 100 nA
Zero Gate Voltage Drain Current ($V_{GS} = 0V$)		$V_{DS} = \text{Rated}, T_A = 25^\circ C$ $V_{DS} = \text{Rated}, T_A = 125^\circ C$	I_{DSS1} I_{DSS2}	— —	0.5 500 25 750	μA μA
Forward Transconductance * ($V_{DS} > I_{D(on)} \times R_{DS(on)}$ Max, $I_{DS} = 50\%$ Rated ID)			g_{fs}	10	25	— Mho
Total Gate Charge Gate to Source Charge Gate to Drain Charge		$V_{GS} = 10V$ $V_{DS} = 300V$ $I_D = 16.5A$	Q_g Q_{gs} Q_{gd}	— — —	150 40 50 200 60 65	nC
Turn on Delay Time Rise Time Turn on Delay Time Fall Time		$V_{DD} = 300V$ $I_D = 16.5A$ $R_G = 2\Omega$	$t_{d(on)}$ t_r $t_{d(off)}$ t_f	— — — —	45 20 200 20 60 40 250 30	nsec
Diode Forward Voltage * ($I_S = \text{Rated } I_D$, $V_{GS} = 0V$, $T_J = 25^\circ C$)			V_{SD}	—	0.875	1.0 V
Diode Reverse Recovery Time Reverse Recovery Charge ($I_F = 10A$, $di/dt = 100A/\mu sec$, $T_J = 25^\circ C$)			t_{rr} Q_{RR}	— —	400 5.6 550 —	nsec μC
Input Capacitance Output Capacitance Reverse Transfer Capacitance		$V_{GS} = 0V, V_{DS} = 25V, f = 1\text{ MHz}$ $V_{GS} = 0V, V_{DS} = 100V, f = 1\text{ MHz}$ $V_{GS} = 0V, V_{DS} = 25V, f = 1\text{ MHz}$ $V_{GS} = 0V, V_{DS} = 100V, f = 1\text{ MHz}$	C_{iss} C_{oss}	— — — —	15.2 9.2 8800 400 — — — —	nF nF pF pF

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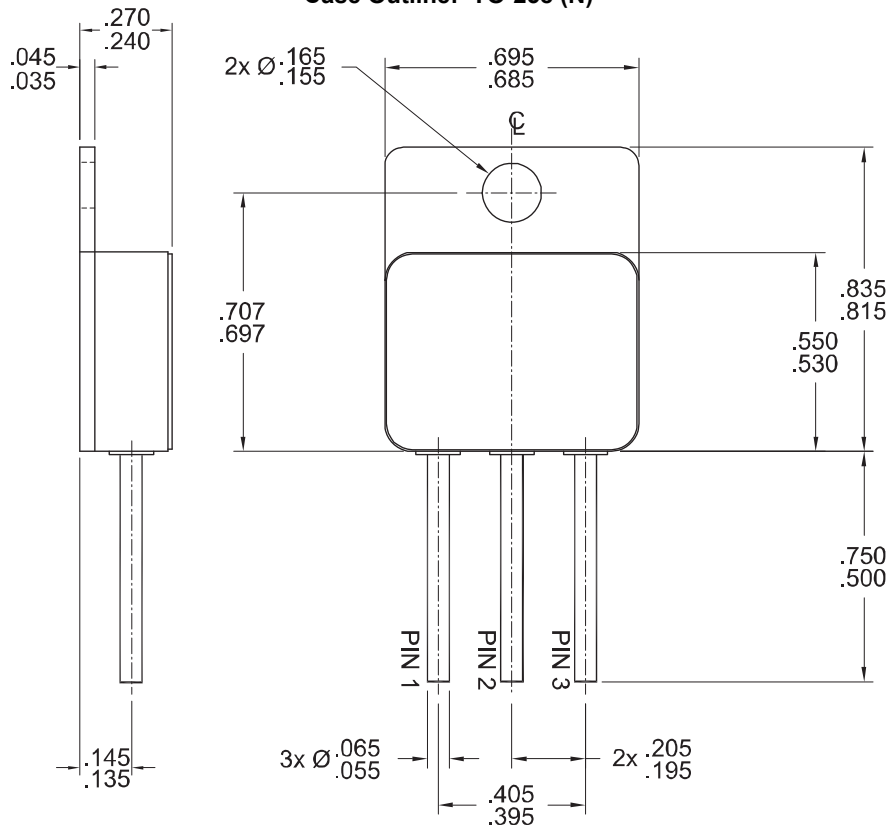


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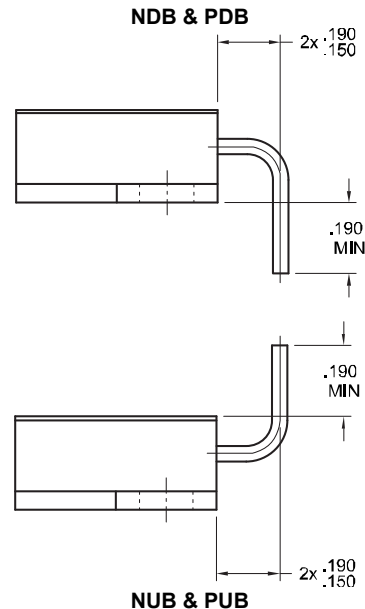
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SFF40N60N SFF40N60P

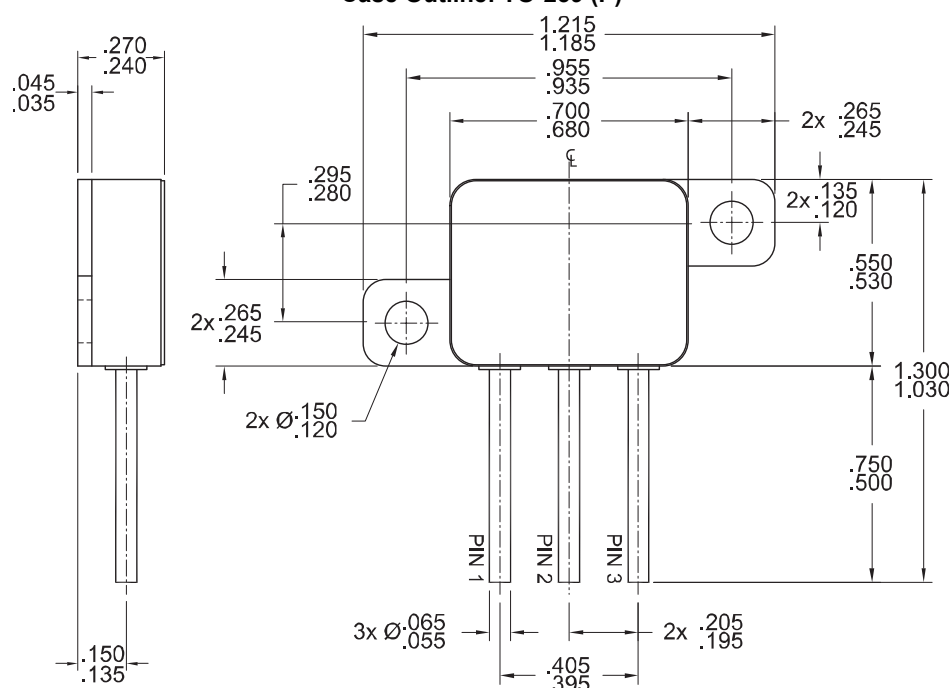
Case Outline: TO-258 (N)



Optional Lead Bend Configuration



Case Outline: TO-259 (P)



NOTES:

* Pulse test: pulse width = 300μsec, duty cycle = 2%

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

3/ Unless otherwise specified, all electrical characteristics @25°C.

Available Part Numbers:

SFF40N60N; SFF40N60NDB;
SFF40N60NUB;
SFF40N60P; SFF40N60PDB;
SFF40N60PUB

PIN ASSIGNMENT (Standard)

Package	Drain	Source	Gate
TO-258 (N)	Pin 1	Pin 2	Pin 3
TO-259 (P)	Pin 1	Pin 2	Pin 3

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