



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

DESIGNER'S DATA SHEET

Part Number / Ordering Information^{1/}

SFF450

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

Lead Option^{3/} ___ = Straight Leads
 DB = Down Bend
 UB = Up Bend

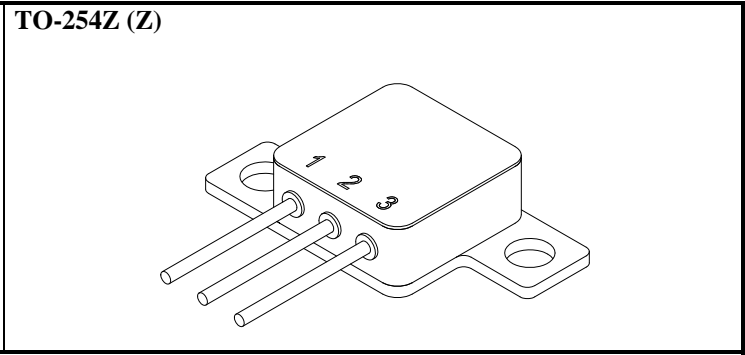
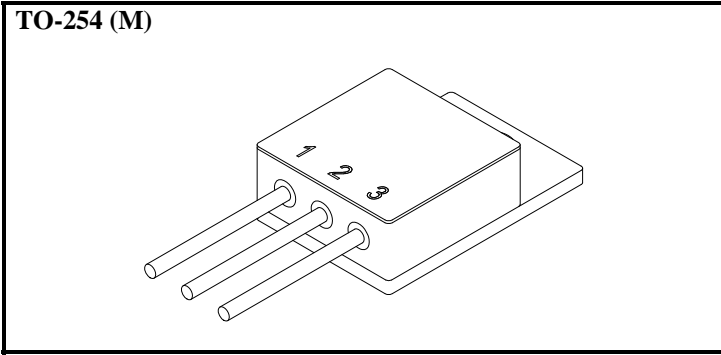
Package^{3/} M = TO-254
 Z = TO-254Z

SFF450M
SFF450Z

13 AMP / 500 Volts
0.4 Ω
N-Channel POWER MOSFET

- 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
 - Ceramic Seals Available for Improved Hermeticity
 - Hermetically Sealed Surface Mount Power Package
 - TX, TXV, Space Level Screening Available
 - Replacement for IRFM450 Types

| Maximum Ratings | | Symbol | Value | Units |
|--|--|------------------|-------------|-------|
| Drain – Source Voltage | | V _{DS} | 500 | Volts |
| Gate – Source Voltage | | V _{GS} | ±20 | Volts |
| Continuous Collector Current | | I _D | 13 | Amps |
| Operating & Storage Temperature | | Top & Tstg | -55 to +150 | °C |
| Maximum Thermal Resistance Junction to Case | | R _{θJC} | 1 | °C/W |
| Total Device Dissipation | T _C = 25°C T _C = 55°C | P _D | 125 95 | W |



For Pin Out Configuration and Optional Lead Bend, Se Page 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 #: F00097E

DOC



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SFF450M
SFF450Z

| Electrical Characteristics @ T _J = 25°C (Unless Otherwise Specified) | | Symbol | Min | Typ | Max | Units |
|---|---|---------------------|-----|------|-------------|-------|
| Drain to Source Breakdown Voltage (VGS=0 V, ID=250 μA) | | BV _{DSS} | 500 | — | — | Volts |
| Drain to Source On State Resistance (VGS=10 V, ID= 7.2 A) | | R _{DS(on)} | — | 0.35 | 0.40 | Ω |
| On State Drain Current (VDS>ID(on) X RDS(on) Max, VGS=10 V) | | I _{D(on)} | 13 | — | — | A |
| Gate Threshold Voltage (VDS=VGS, ID= 250 μA) | | V _{GS(th)} | 2.0 | — | 4.0 | V |
| Forward Transconductance (VDS≥ 50 V, IDS= 7.2 A) | | g _{fs} | 8.7 | 131 | — | mho |
| Zero Gate Voltage Drain Current (VDS=max rated voltage, VGS=0 V) (VDS=80% rated VDS, VGS=0 V, TA=125°C) | | I _{DSS} | — | — | 250 1000 | μA |
| Gate to Source Leakage Forward | At rated VGS | I _{GSS} | — | — | +100 | nA |
| Gate to Source Leakage Reverse | | | — | — | -100 | |
| Total Gate Charge | VGS=10 Volts 80% rated VDS Rated ID | Q _g | — | 83 | 120 | nC |
| Gate to Source Charge | | Q _{gs} | — | 11 | 17 | |
| Gate to Drain Charge | | Q _{gd} | — | 42 | 64 | |
| Turn on Delay Time | VDD=50% Rated VDS 50% Rated ID RG= 6.2Ω PD= 20 W | td _(on) | — | 18 | 27 | nsec |
| Rise Time | | tr | — | 44 | 66 | |
| Turn on Delay Time | | td _(off) | — | 70 | 100 | |
| Fall Time | | tf | — | 40 | 60 | |
| Diode Forward Voltage (IS= Rated ID, VGS=0 V, T _J =25°C) | | V _{SD} | — | — | 1.4 | V |
| Diode Reverse Recovery Time | T _J =25°C IF= Rated ID di/dt=100A/μsec | t _{rr} | 280 | 580 | 1200 | nsec |
| Reverse Recovery Charge | | Q _{RR} | 3.2 | 6.7 | 14 | μC |
| Input Capacitance | VGS=0 Volts VDS=25 Volts f=1 MHz | C _{iss} | — | 2700 | — | pF |
| Input Capacitance | | C _{oss} | — | 350 | — | |
| Reverse Transfer Capacitance | | C _{rss} | — | 75 | — | |

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

Available Part Numbers:
SFF450M; SFF450MDB; SFF450MUB;
SFF450Z; SFF450ZDB; SFF450ZUB;

| 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 |



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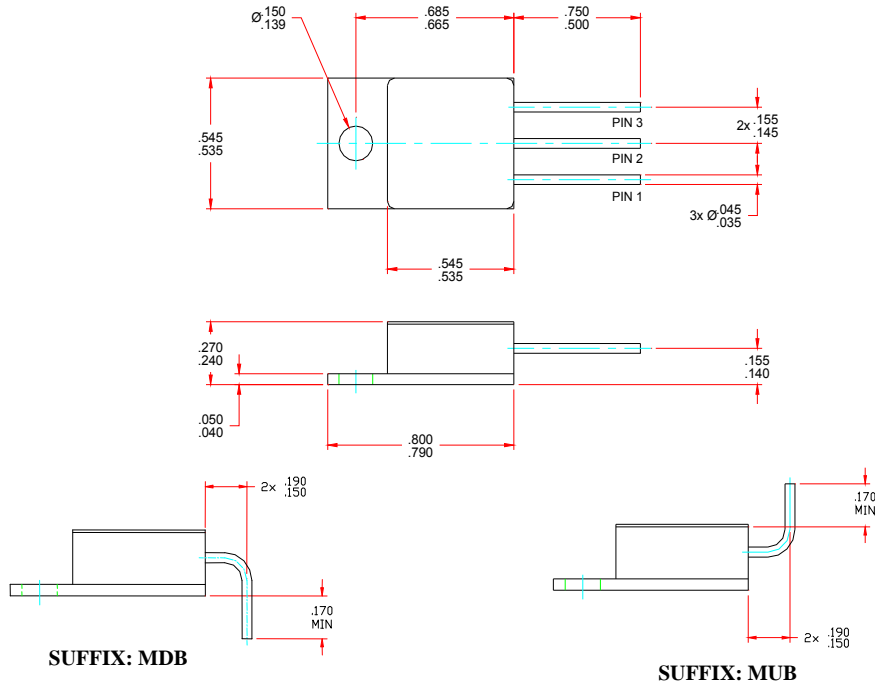
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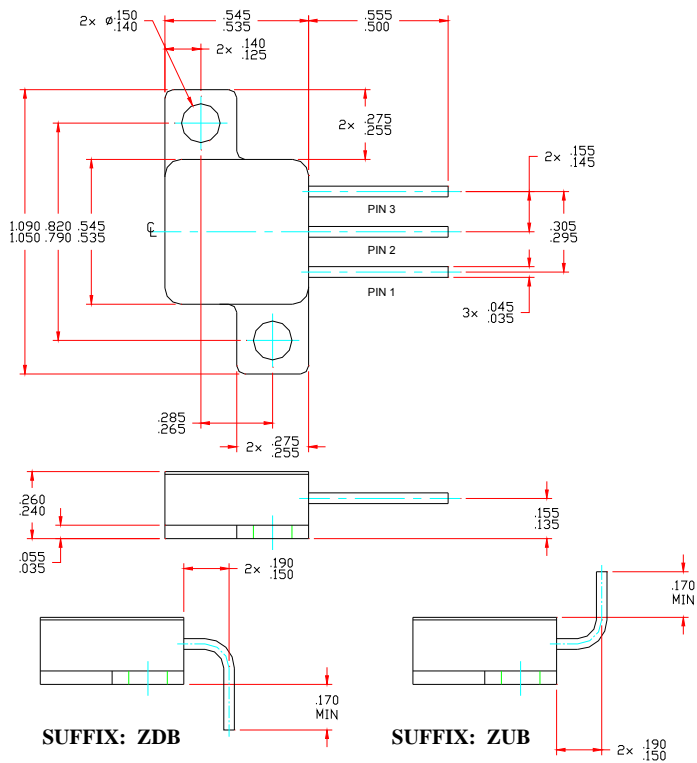
SFF450M

SFF450Z

Case Outline: TO-254 (M)



Case Outline: TO-254Z (Z)



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