

SEMITRONICS CORP.

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SEFM460

N-Channel MOSFET

FEATURES

- Isolated Case
- Hermetically Sealed Package
- Repetitive Avalanche Rating
- Dynamic dv/dt Rating
- Ceramic Eyelets
- MIL STX Screening Available

APPLICATIONS

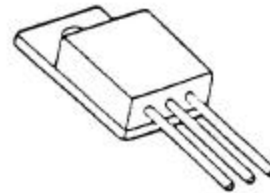
- High Reliability Power Supplies
- Switch Mode Power Supplies
- Battery Back-Up Supplies
- High Speed Power Switching

DESCRIPTION

The SEFM460 is a 19 Amp, 500 volts, 0.27 ohms. Power Mosfet packaged in three lead hermetically sealed TO-254AA metallic package.

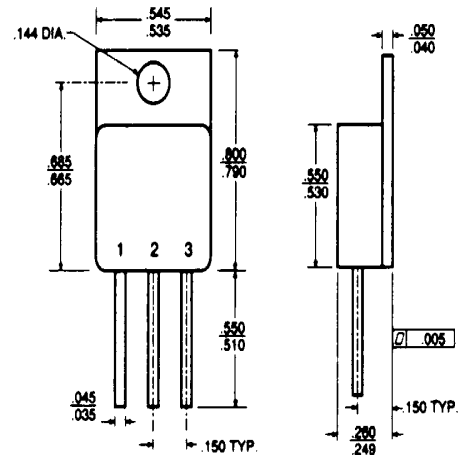
Custom Lead Forming Available
European Pin-Out Available
Add STX suffix for Military screening

PACKAGE



TO-254

CASE OUTLINE



Pin 1: D Pin 2: S Pin 3: G

Absolute Maximum Ratings

Parameter	Maximum	Units
Continuous Drain Current I_p @ $T_c = 25^\circ C$, $V_{GS} @ 10V$	19	A
Continuous Drain Current I_p @ $T_c = 100^\circ C$, $V_{GS} @ 10V$	12	A
Pulse Drain Current I_{DM}	76	A
Power Dissipation $P_D @ T_c = 25^\circ C$	250	W
Linear Derating Factor	2.0	W/ $^\circ C$
Gate-to-Source Voltage V_{GS}	± 20	V
Peak Diode Recovery dv/dt	3.5	V/ns
Operating & Storage Temperature T_j & T_{STG}	-55 to 150	$^\circ C$

Static @ T_j = 25°C (unless otherwise specified)

Parameter	Min.	Typ.	Max.	Units	Conditions
Drain-to-Source Breakdown Voltage $V_{(BR)DSS}$	500	—	—	V	$V_{GS} = 0V, I_D = 1.0mA$
Static Drain to Source On-Resistance $R_{DS(on)}$	—	—	0.27 0.31	\dot{U}	$V_{GS} = 10V, I_D = 12A$ $V_{GS} = 10V, I_D = 19A$
Gate Threshold Voltage V_{GS}	2.0	—	4.0	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
Drain-to-Source Leakage Current I_{DSS}	—	—	25	μA	$V_{DS} = 0.8 \times \text{Max rating}, V_{GS} = 0V$
	—	—	250		$V_{DS} = 0.8 \times \text{Max Rating}, V_{GS} = 0V,$ $T_J = 125^\circ C$
Gate-to-Source Forward Leakage I_{GSS}	—	—	100	nA	$V_{GS} = 20V$
Gate-to-Source Reverse Leakage I_{GSS}	—	—	-100		$V_{GS} = -20V$

Dynamic @ T_j = 25°C (unless otherwise specified)

Parameter	Min.	Typ.	Max.	Units	Conditions
Forward Transconductance g_{fs}	13	—	—	S	$V_{DS} = 15V, I_{DS} = 12A$
Total Gate Charge Q_g	—	—	190	nC	$I_D = 19A$ $V_{DS} = 0.5 \times \text{Max Rating}$ $V_{GS} = 10V$
Gate-to-Source Charge Q_{gs}	—	—	27		
Gate-to-Drain ("Miller") charge Q_{gd}	—	—	135		
Turn-on-Delay Time $t_{d(on)}$	—	—	35	ns	$V_{DD} = 250V$ $I_D = 19A$ $R_G = 2.35\dot{U}$
Rise Time t_r	—	—	120		
Turn-Off-Delay Time $t_{d(off)}$	—	—	130		
Fall time t_f	—	—	98		
Input Capacitance C_{iss}	—	4300	—	pF	$V_{GS} = 0V$ $V_{DS} = 25V$ $f = 1.0 \text{ MHz}$
Output Capacitance C_{oss}	—	1000	—		
Reverse Transfer Capacitance C_{rss}	—	250	—		
Internal Drain Inductance L_D	—	8.7	—	nH	Measured from drain lead, 6mm from package to center of die.
Internal Source Inductance L_S	—	8.7	—		

Avalanche Characteristics

Parameter		Typ.	Max.	Units
Single Pulse Avalanche Energy	E_{AS}	—	1200	mJ
Avalanche Current	I_{AR}	—	19	A
Repetitive Avalanche Energy	E_{AR}	—	25	mJ

Thermal Resistance

Parameter		Typ.	Max.	Units
Junction-to-case	$R_{\theta JC}$	—	0.5	°C/W
Case-to-Sink, flat, Greased Surface	$R_{\theta CS}$	0.21	—	
Junction-to-ambient	$R_{\theta JA}$	—	48	

Diode Characteristics

Parameter		Min.	Typ.	Max.	Units	Conditions
Continuous Source Current	I_S	—	—	19	A	
Pulsed Source Current	I_{SM}	—	—	76		
Diode Forward Voltage	V_{SD}	—	—	1.8	V	$T_j = 25^\circ\text{C}$, $I_S = 19\text{A}$, $V_{GS} = 0\text{V}$
Reverse Recovery Time	t_{rr}	—	—	580	ns	$T_j = 25^\circ\text{C}$, $I_F = 19\text{A}$ $di/dt = 100\text{A}/\mu\text{s}$ $V_{DD} = 50\text{V}$
Reverse Recovery Charge	Q_{rr}	—	—	8.1	uC	
Forward Turn-on Time	t_{on}	Intrinsic turn-on time is negligible				