SEMITRONICS CORP.

SEFM350

64 Commercial Street, Freeport, N.Y. 11520
Phone: (516) 623-9400 • Fax. (516) 623-6954

N-Channel MOSFET

FEATURES

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

APPLICATIONS

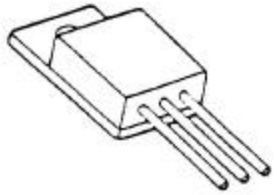
- High Reliability Power Supplies
- Switch Mode Power Supplies
- Battery Back-Up Supplies
- High Speed Power Switching

DESCRIPTION

The SEFM350 is a 14Amp, 400volts, 0.315 ohms. Mosfet packaged in three lead hermetically sealed TO-254AA metallic package. Ceramic Eyelets construction assure a higher level of reliability.

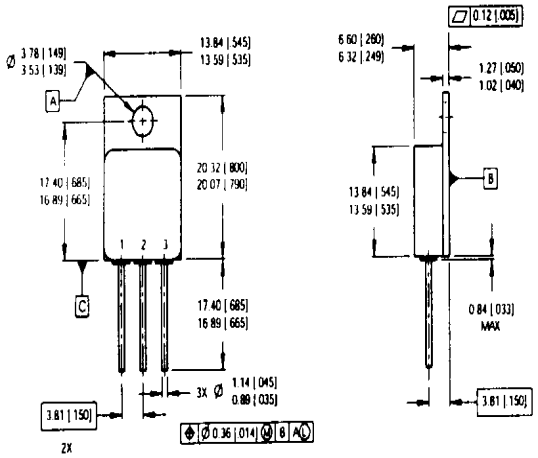
Custom Lead Forming Available
Custom Pin-Outs Available
Add STX suffix for Military screening

PACKAGE



TO-254AA

CASE OUTLINE



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

Absolute Maximum Ratings

Parameter	Maximum	Units
Continuous Drain Current Ip @ Tc = 25° C, V_{GS} @ 10V	14	A
Continuous Drain Current Ip @ Tc = 100°C, V_{GS} @ 10V	9.0	A
Pulse Drain Current I_{DM}	56	A
Power Dissipation P_D @ Tc =25° C	150	W
Linear Derating Factor	1.2	W/° C
Gate-to-Source Voltage V_{GS}	±20	V
Peak Diode Recovery dv/dt	4.0	V/ns
Operating & Storage Temperature Tj & T_{STG}	-55 to +150	°C

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

Parameter		Min.	Typ.	Max.	Units	Conditions
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	400	—	—	V	V_{GS} = 0V, I_D = 1.0mA
Static Drain to Source On-Resistance	$R_{DS(on)}$	— —	— —	0.315 0.415	Ω	V_{GS} = 10V, I_D = 9A V_{GS} = 10V, I_D = 14A
Gate Threshold Voltage	V_{GS}	2.0	—	4.0	V	V_{DS} = V_{GS}, I_D = 250uA
Drain-to-Source Leakage Current	I_{DSS}	—	—	25	uA	V_{DS} = 0.8 x Max rating, V_{GS} = 0V
		—	—	250		V_{DS} = 0.8 x Max Rating, V_{GS} = 0V, Tj =125°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 @ Tj = 25°C (unless otherwise specified)

Parameter		Min.	Typ.	Max.	Units	Conditions
Forward Transconductance	gfs	6	—	—	S	V_{DS} = 15V, I_{DS} = 9.0A
Total Gate Charge	Qg	—	—	110	nC	I_D = 14A V_{DS} = 0.5 x Max Rating V_{GS} = 10V
Gate-to-Source Charge	Qgs	—	—	18		
Gate-to-Drain (“Miller”) charge	Qgd	—	—	65		
Turn-on-Delay Time	$t_{d(on)}$	—	—	35	ns	V_{DD} = 200V I_D = 14A V_{GS} = 10V R_G = 2.35Ω
Rise Time	t_r	—	—	190		
Turn-Off-Delay Time	$t_{d(off)}$	—	—	170		
Fall time	t_f	—	—	130		
Input Capacitance	C_{iss}	—	2600	—	pF	V_{GS} = 0V V_{DS} = 25V f = 1.0 MHZ
Output Capacitance	C_{oss}	—	660	—		
Reverse Transfer Capacitance	C_{rss}	—	250	—		
Internal Drain Inductance	L_D	—	4.0	—	nH	Measured from drain lead, 6mm from package to center of die.
Internal Source Inductance	L_S	—	4.0	—		Measured from the source lead, 6mm from package to source bonding pad.

Avalanche Characteristics

Parameter		Typ.	Max.	Units
Single Pulse Avalanche Energy	E_{AS}	—	700	mJ
Avalanche Current	I_{AR}	—	14	A
Repetitive Avalanche Energy	E_{AR}	—	15	mJ

Thermal Resistance

Parameter		Typ.	Max.	Units
Junction-to-case	$R_{\theta JC}$	—	0.83	°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	—	—	14	A	
Pulsed Source Current	I_{SM}	—	—	56		
Diode Forward Voltage	V_{SD}	—	—	1.7	V	Tj = 25°C, I_S=14A, V_{GS}=0V
Reverse Recovery Time	t_{rr}	—	—	1200	ns	Tj = 25°C, I_F=14A di/dt = 100A/us V_{DD} 50V
Reverse Recovery Charge	Q_{rr}	—	—	11	uC	
Forward Turn-on Time	t_{on}	Intrinsic turn-on time is negligible				

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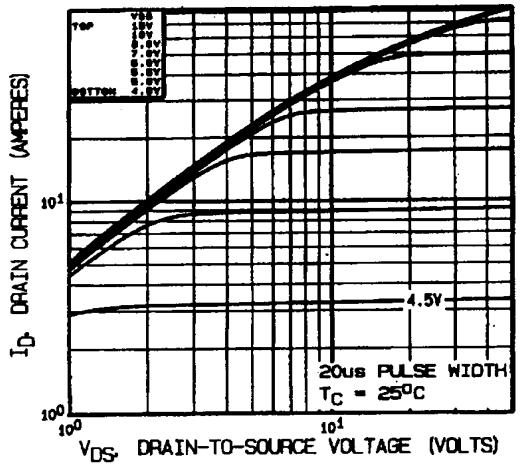

Fig 1. Typical Output Characteristics

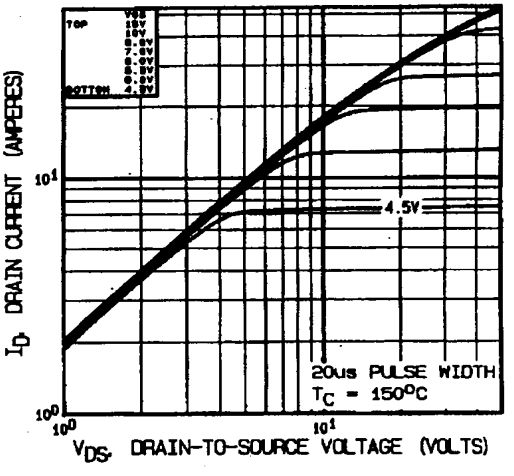

Fig 2. Typical Output Characteristics

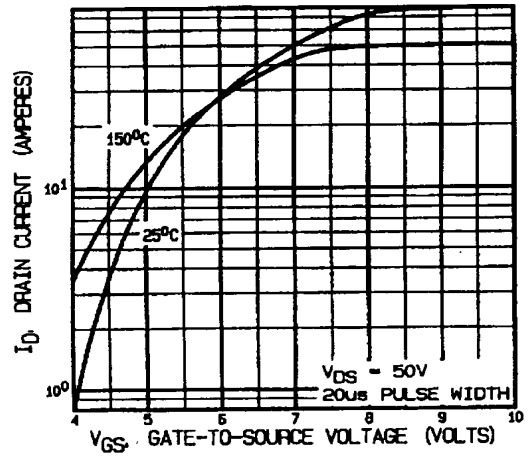

Fig 3. Typical Transfer Characteristics

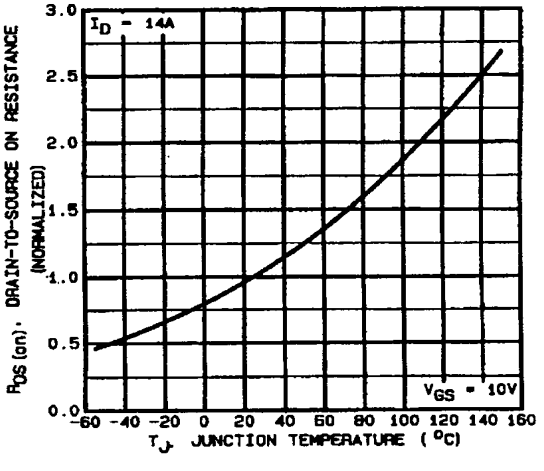

Fig 4. Normalized On-Resistance Vs. Temperature

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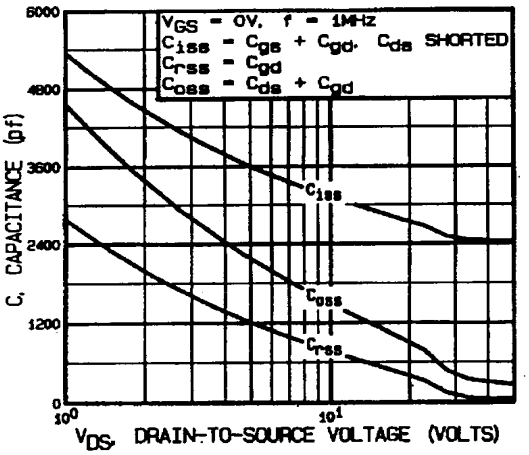

Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

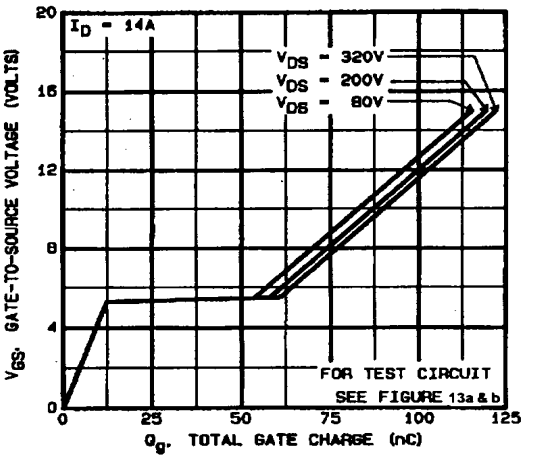

Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

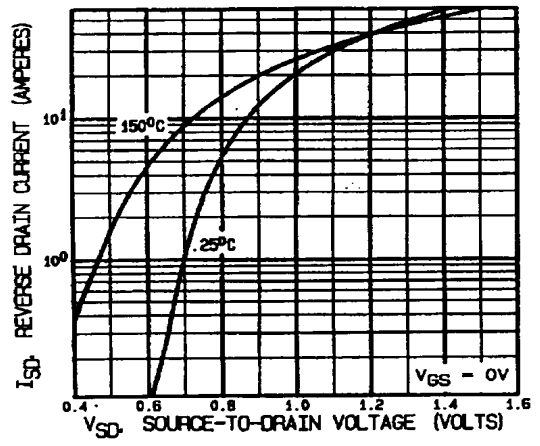

Fig 7. Typical Source-Drain Diode Forward Voltage

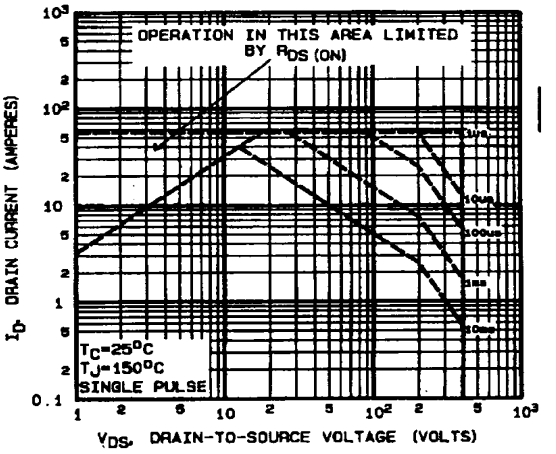

Fig 8. Maximum Safe Operating Area

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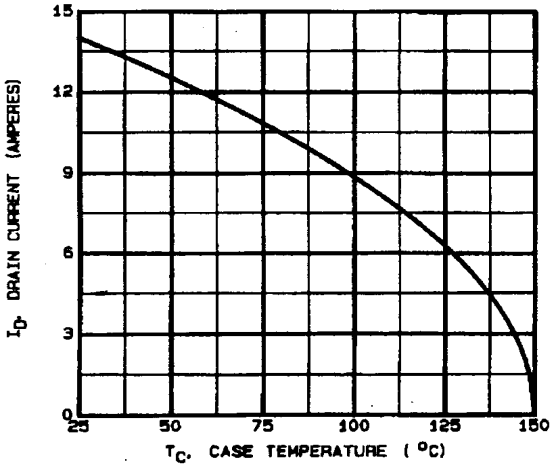

Fig 9. Maximum Drain Current Vs. Case Temperature

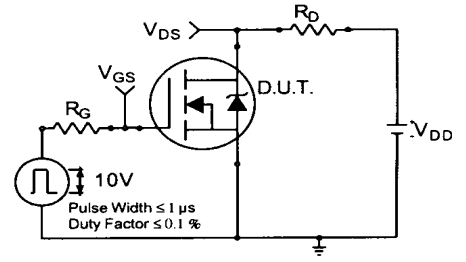

Fig 10a. Switching Time Test Circuit

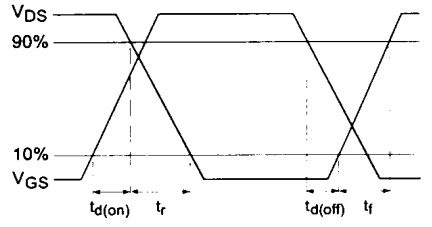

Fig 10b. Switching Time Waveforms

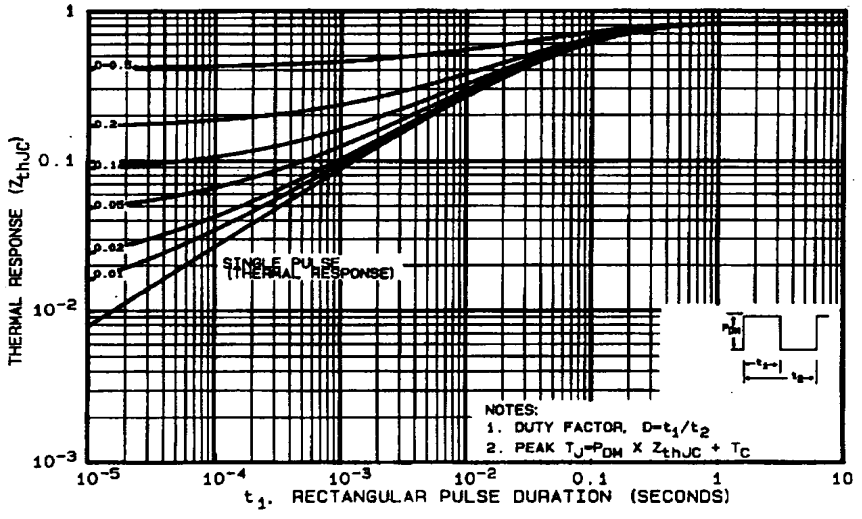

Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case

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