SEMITRONICS CORP.

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

SEFM150

N-Channel MOSFET

FEATURES

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

APPLICATIONS

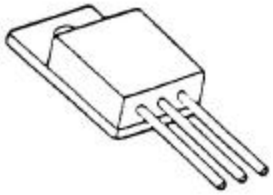
- High Reliability Power Supplies
- Switch Mode Power Supplies
- Battery Back-Up Supplies
- High Speed Power Switching

DESCRIPTION

The SEFM150 is a 34 Amp, 100 volts, 0.07 ohms. Power Mosfet packaged in three lead hermetically sealed TO-254AA metallic package.

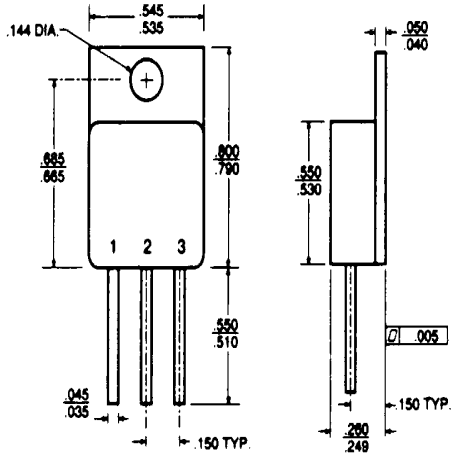
Custom Lead Forming Available
European Pin-Out Available
Add STX suffix for Military screening

PACKAGE



TO-254

CASE OUTLINE



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

Absolute Maximum Ratings

Parameter	Maximum	Units
Continuous Drain Current Ip @ Tc = 25° C, V_{GS} @ 10V	34	A
Continuous Drain Current Ip @ Tc = 100°C, V_{GS} @ 10V	21	A
Pulse Drain Current I_{DM}	136	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	5.5	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	$V_{(BR)DSS}$	100	—	—	V	V_{GS} = 0V, I_D = 1.0mA
Static Drain to Source On-Resistance	$R_{DS(on)}$	— —	— —	0.07 0.081	Ù	V_{GS} = 10V, I_D = 21A V_{GS} = 10V, I_D = 34A
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	9	—	—	S	V_{DS} = 15V, I_{DS} = 21A
Total Gate Charge	Qg	50	—	125	nC	I_D = 34A V_{DS} = 0.5 x Max Rating V_{GS} = 10V
Gate-to-Source Charge	Qgs	8	—	22		
Gate-to-Drain (“Miller”) charge	Qgd	15	—	65		
Turn-on-Delay Time	$t_{d(on)}$	—	—	35	ns	V_{DD} = 50V I_D = 34A R_G = 2.35Ù
Rise Time	t_r	—	—	190		
Turn-Off-Delay Time	$t_{d(off)}$	—	—	170		
Fall time	t_f	—	—	130		
Input Capacitance	C_{iss}	—	3700	—	pF	V_{GS} = 0V V_{DS} = 25V f = 1.0 MHZ
Output Capacitance	C_{oss}	—	1100	—		
Reverse Transfer Capacitance	C_{rss}	—	200	—		
Drain to Case Capacitance	C_{DC}	—	12	—		
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	—		Measured from the source lead, 6mm from package to source bonding pad.

Avalanche Characteristics

Parameter		Typ.	Max.	Units
Single Pulse Avalanche Energy	E_{AS}	—	150	mJ
Avalanche Current	I_{AR}	—	34	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	—	—	34	A	
Pulsed Source Current	I_{SM}	—	—	136		
Diode Forward Voltage	V_{SD}	—	—	1.8	V	Tj = 25°C, I_S=34A, V_{GS}=0V
Reverse Recovery Time	t_{rr}	—	—	500	ns	Tj = 25°C, I_F=34A di/dt = 100A/us V_{DD} 50V
Reverse Recovery Charge	Q_{rr}	—	—	2.9	uC	
Forward Turn-on Time	t_{on}	Intrinsic turn-on time is negligible				

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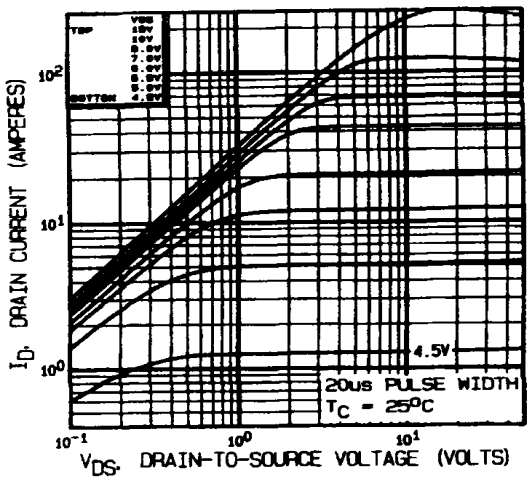

Fig. 1 — Typical Output Characteristics, T_C = 25°C

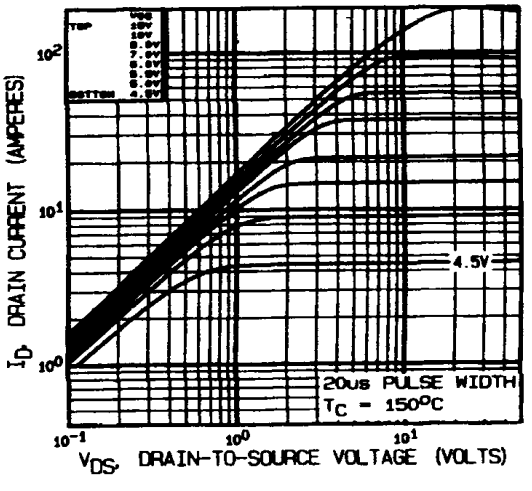

Fig. 2 — Typical Output Characteristics, T_C = 150°C

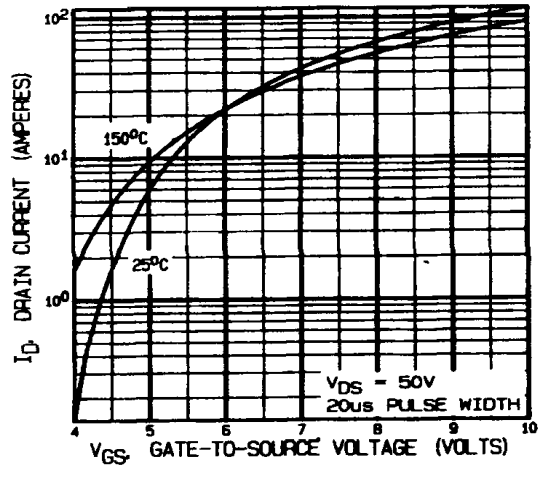

Fig. 3 — Typical Transfer Characteristics

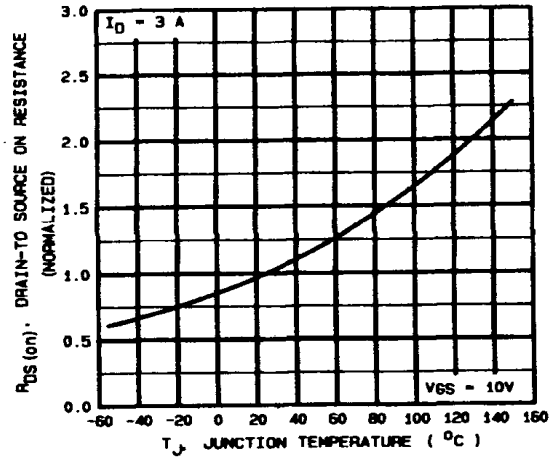

Fig. 4 — Normalized On-Resistance Vs. Temperature

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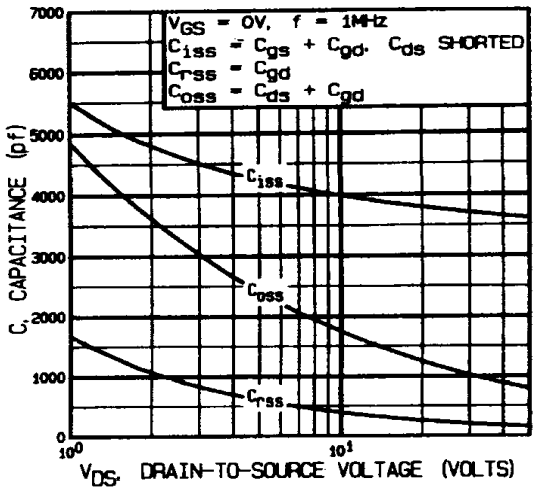

Fig. 5 — Typical Capacitance Vs. Drain-to-Source Voltage

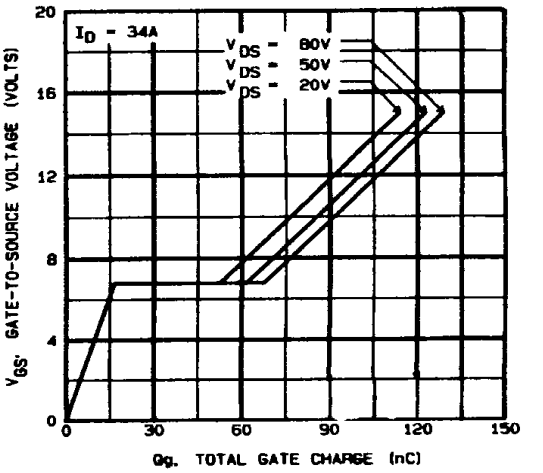

Fig. 6 — Typical Gate Charge Vs. Gate-to-Source Voltage

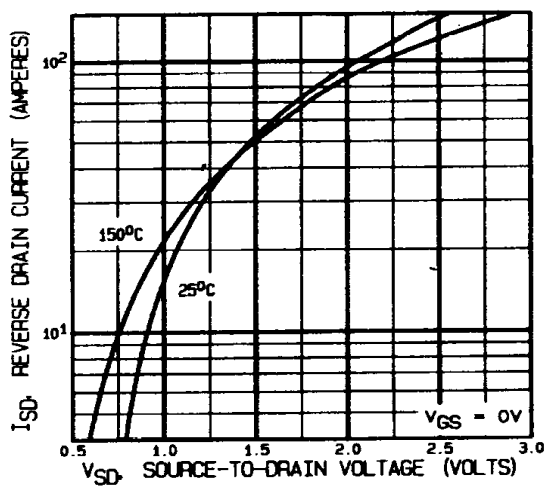

Fig. 7 — Typical Source-Drain Diode Forward Voltage

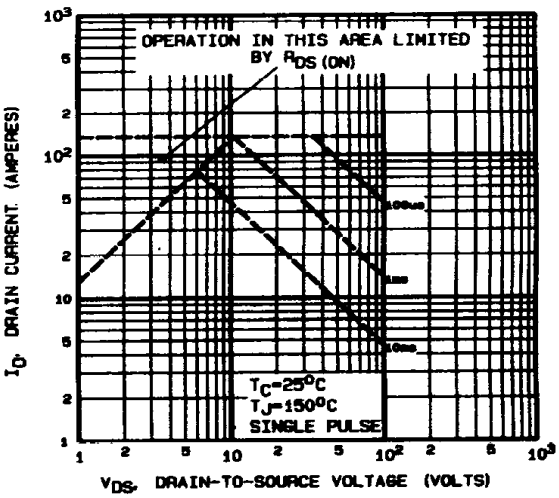

Fig. 8 — Maximum Safe Operating Area

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MIL-PRF-19500 STX SCREENING
DISCRETE SEMICONDUCTORS

SCREEN	MIL-STD-750 METHOD	CONDITION	SCREENING LEVEL
Internal Visual	Diodes-2073	Precap	100%
	Powerfets-2069	Precap	100%
	Transistors-2072	Precap	100%
Stabilization Bake	1032	150^0C	100%
Temperature Cycling	1051	C 20 cycles	100%
Constant Acceleration	2006	10,000 G's Y1	100%
HTRB	Diodes-1038	A	100%
	Powerfets-1042	B	100%
	Transistors-1039	A	100%
Pre Burn-In Electrical Test	-	-	100%
Burn-In	Diodes-1038	B-96 hrs.	100%
	Powerfets-1042	A-160 hrs.	100%
	Transistors-1039	B-160 hrs.	100%
Final Electrical Test	-	-	100%
Hermetic Seal Fine & Gross Leak	1071	H	100%