SEMITRONICS CORP.

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SES744

SMPS MOSFET

FEATURES

- Isolated Case
- Hermetically Sealed Package
- Improved Gate, Avalanche and dynamic dv.dt Ruggedness
- Low gate charge Qg
- MIL STX Screening Available

APPLICATIONS

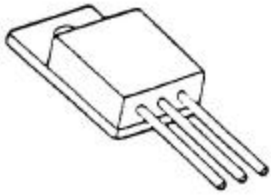
- High Reliability Power Supplies
- Switch Mode Power Supplies
- Battery Back-Up Supplies
- High Speed Power Switching

DESCRIPTION

The SES744 is a 11 Amp, 500 volts, 0.52 ohms. Power Mosfet packaged in three lead hermetically sealed TO-257 metallic package.

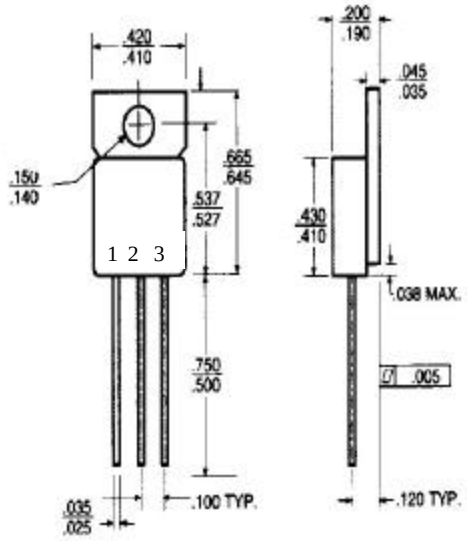
Custom Lead Forming Available
Ceramic Feedthroughs Available
Add STX suffix for Military screening

PACKAGE



TO-257

CASE OUTLINE



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

Absolute Maximum Ratings

Parameter	Maximum	Units
Continuous Drain Current Ip @ Tc = 25° C, V_{GS} @ 10V	11	A
Continuous Drain Current Ip @ Tc = 100°C, V_{GS} @ 10V	7.0	A
Pulse Drain Current I_{DM}	44	A
Power Dissipation P_D @ Tc =25° C	170	W
Linear Derating Factor	1.3	W/° C
Gate-to-Source Voltage V_{GS}	± 30	V
Peak Diode Recovery dv/dt	6.9	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	$V_{(BR)DSS}$	500	—	—	V	V_{GS} = 0V, Ip = 250uA
Static Drain to Source On-Resistance	$R_{DS(on)}$	—	—	0.52	Ù	V_{GS} = 10V, Ip = 6.6A
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} = 500V, V_{GS} = 0V
		—	—	250		V_{DS} = 400V, V_{GS} = 0V, Tj =150°C
Gate-to-Source Forward Leakage	I_{GSS}	—	—	100	nA	V_{GS} = 30V
Gate-to-Source Reverse Leakage	I_{GSS}	—	—	-100		V_{GS} = -30V

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

Parameter		Min.	Typ.	Max.	Units	Conditions
Forward Transconductance	gfs	6.1	—	—	S	V_{DS} = 50V, I_D = 6.6A
Total Gate Charge	Qg	—	—	52	nC	I_D = 11A V_{DS} = 400V V_{GS} = 10V
Gate-to-Source Charge	Qgs	—	—	13		
Gate-to-Drain (“Miller”) charge	Qgd	—	—	18		
Turn-on-Delay Time	$t_{d(on)}$	—	14	—	ns	V_{DD} = 250V I_D = 11A R_G = 9.1Ù R_D = 22Ù
Rise Time	t_r	—	35	—		
Turn-Off-Delay Time	$t_{d(off)}$	—	32	—		
Fall time	t_f	—	28	—		
Input Capacitance	C_{iss}	—	1423	—	pF	V_{GS} = 0V V_{DS} = 25V f = 1.0MHZ
Output Capacitance	C_{oss}	—	208	—		
Reverse Transfer Capacitance	C_{rss}	—	8.1	—		
Output Capacitance	C_{oss}	—	2000	—		V_{GS} = 0V, V_{DS} = 1.0V, f = 1.0MHZ
Output Capacitance	C_{oss}	—	55	—		V_{GS} = 0V, V_{DS} = 400V, f = 1.0MHZ
Effective Output Capacitance	$C_{oss\ eff}$	—	97	—		V_{GS} = 0V, V_{DS} = 0V to 400V

Avalanche Characteristics

Parameter		Typ.	Max.	Units
Single Pulse Avalanche Energy	E_{AS}	—	275	mJ
Avalanche Current	I_{AR}	—	11	A
Repetitive Avalanche Energy	E_{AR}	—	17	mJ

Thermal Resistance

Parameter		Typ.	Max.	Units
Junction-to-case	$R_{\theta JC}$	—	1.0	°C/W
Case-to-Sink, flat, Greased Surface	$R_{\theta CS}$	0.50	—	
Junction-to-ambient	$R_{\theta JA}$	—	62	

Diode Characteristics

Parameter		Min.	Typ.	Max.	Units	Conditions
Continuous Source Current	I_S	—	—	11	A	
Pulsed Source Current	I_{SM}	—	—	44		
Diode Forward Voltage	V_{SD}	—	—	1.5	V	Tj = 25°C, I_S=11A, V_{GS}=0V
Reverse Recovery Time	t_{rr}	—	510	770	ns	Tj = 25°C, I_F=11A di/dt = 100A/us
Reverse Recovery Charge	Q_{rr}	—	3.4	5.1	uC	
Forward Turn-on Time	t_{on}	Intrinsic turn-on time is negligible				