

SEMITRONICS CORP.

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SEF40604

POWER MOSFET

FEATURES

- Isolated Case
- Hermetically Sealed Package
- High dv/dt
- Low $R_{DS(on)}$ 0.35 Ohms
- Eutectic Die Attachment for Hi Reliability
- MIL STX Screening Available

APPLICATIONS

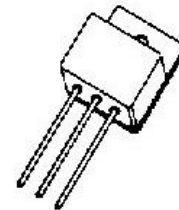
- High Reliability Power Supplies
- Switch Mode Power Supplies
- Battery Back-Up Supplies
- High Speed Power Switching

DESCRIPTION

The SEF40604 is a 20 Amp, 600 volts, 0.35 ohms. Power Mosfet packaged in three lead hermetically sealed TO-258 metallic package.

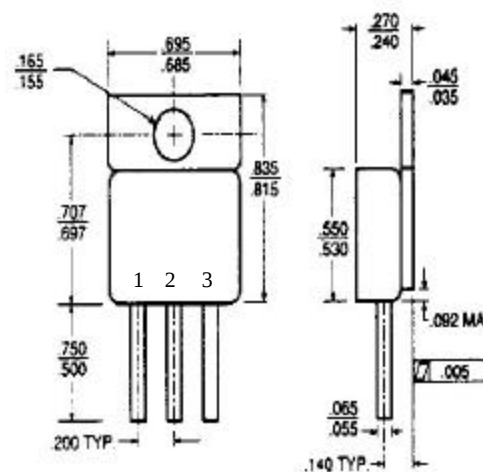
Custom Lead Forming Available
Ceramic Feedthroughs Available
Add STX suffix for Military screening

PACKAGE



TO-258AA

CASE OUTLINE



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

Absolute Maximum Ratings

Parameter	Maximum	Units
Continuous Drain Current I_D @ $T_c = 25^\circ C$,	20	A
Continuous Drain Current I_{AR} @ $T_c = 25^\circ C$	20	A
Pulse Drain Current I_{DM} @ $T_c = 25^\circ C$	80	A
Power Dissipation P_D @ $T_c = 25^\circ C$	300	W
Gate-to-Source Voltage V_{GS}	± 20	V
Peak Diode Recovery dv/dt	5.0	V/ns
Operating & Storage Temperature T_j & T_{STG}	-55 to +150	$^\circ C$

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

Parameter	Min.	Typ.	Max.	Units	Conditions
Drain-to-Source Breakdown Voltage $V_{(BR)DSS}$	600	—	—	V	$V_{GS} = 0V$, $I_D = 250\mu A$
Static Drain to Source On-Resistance $R_{DS(on)}$	—	—	0.35	Ω	$V_{GS} = 10V$, $I_D = 10A$
Gate Threshold Voltage V_{GS}	2.0	—	4.5	V	$V_{DS} = V_{GS}$, $I_D = 4 mA$
Drain-to-Source Leakage Current I_{DSS}	—	—	250	μA	$V_{DS} = 480V$, $V_{GS} = 0V$
	—	—	1000		$V_{DS} = 480V$, $V_{GS} = 0V$, $T_j = 125^\circ C$
Gate-to-Source Forward Leakage I_{GSS}	—	—	100	nA	$V_{GS} = 20V$
Gate-to-Source Forward Leakage I_{GSS}	—	—	-100		$V_{GS} = -20V$

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

Parameter	Min.	Typ.	Max.	Units	Conditions
Forward Transconductance g_{fs}	11	18	—	S	$V_{DS} = 10V$, $I_D = 10A$ pulse
Total Gate Charge Q_g	—	151	170	nC	$I_D = 10A$ $V_{DS} = 300V$ $V_{GS} = 10V$
Gate-to-Source Charge Q_{gs}	—	29	40		
Gate-to-Drain ("Miller") charge Q_{gd}	—	60	85		
Turn-on-Delay Time $t_{d(on)}$	—	20	40	ns	$V_{GS} = 10V$ $V_{DS} = 300V$ $I_D = 10A$ $R_G = 2 Ohms$
Rise Time t_r	—	43	60		
Turn-Off-Delay Time $t_{d(off)}$	—	70	90		
Fall time t_f	—	40	60		
Input Capacitance C_{iss}	—	4500	—	pF	$V_{GS} = 0V$
Output Capacitance C_{oss}	—	420	—		$V_{DS} = 25V$
Reverse Transfer Capacitance C_{rss}	—	140	—		$f = 1.0 MHz$

Avalanche Characteristics

Parameter	Typ.	Max.	Units
Repetitive Avalanche Energy @ $T_C = 25^\circ\text{C}$ E_{AR}	—	30	mJ

Thermal Resistance

Parameter	Typ.	Max.	Units
Junction-to-case $R_{\theta JC}$	—	0.42	$^\circ\text{C/W}$
Case-to-Sink, flat, Greased Surface $R_{\theta CS}$	0.25	—	

Diode Characteristics

Parameter	Min.	Typ.	Max.	Units	Conditions
Continuous Source Current I_S	—	—	20	A	$T_j = 25^\circ\text{C}$
Pulsed Source Current I_{SM}	—	—	80		
Diode Forward Voltage V_{SD}	—	—	1.5	V	$T_j = 25^\circ\text{C}$, $I_S = 20\text{A}$, $V_{GS} = 0\text{V}$
Reverse Recovery Time t_{rr}	—	—	250	ns	$T_j = 25^\circ\text{C}$, $I_F = 20\text{A}$ $di/dt = 100\text{A}/\mu\text{s}$ $V_R = 100\text{V}$
Reverse Recovery Charge Q_{rr}	—	1		μC	
Reverse Recovery Current I_{RM}		10		A	$T_j = 25^\circ\text{C}$

Fig. 1 Output Characteristics

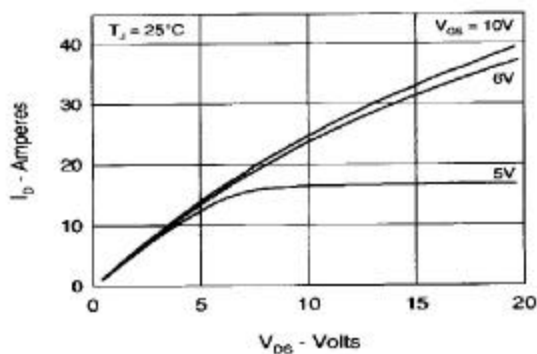


Fig. 2 Input Admittance

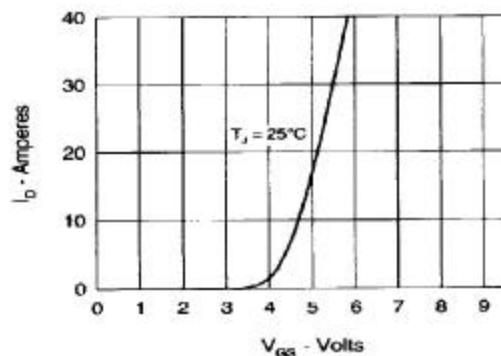


Fig. 3 $R_{DS(on)}$ vs. Drain Current

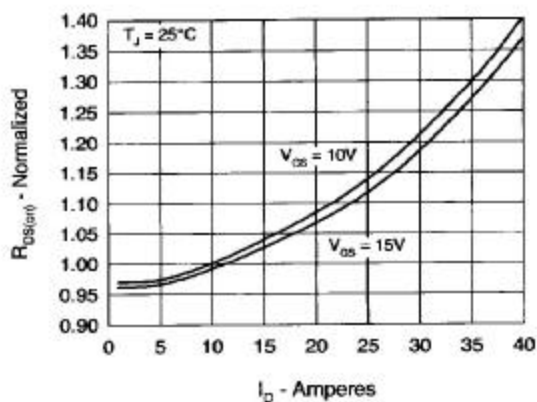


Fig. 4 Temperature Dependence of Drain to Source Resistance

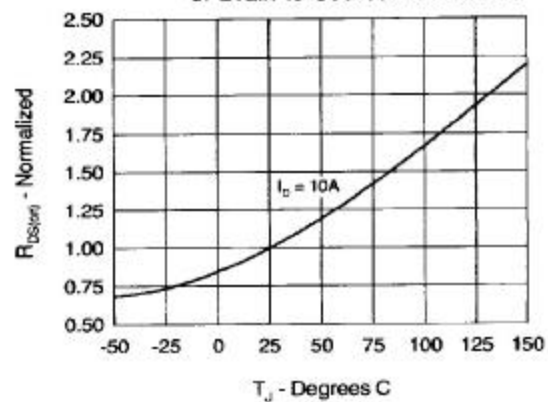


Fig. 5 Drain Current vs. Case Temperature

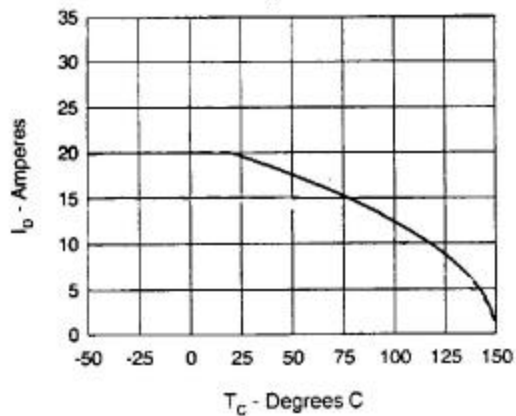


Fig. 6 Temperature Dependence of Breakdown and Threshold Voltage

