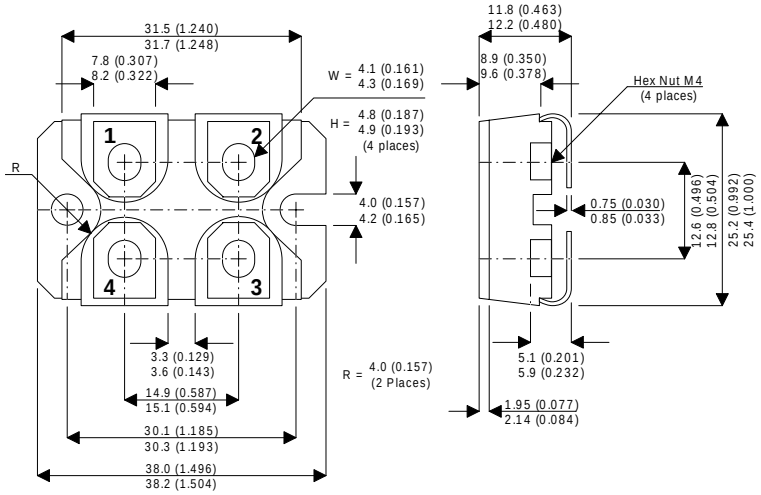
SEME LAB

BFC17

4TH GENERATION MOSFET

SOT–227 Package Outline.

Dimensions in mm (inches)



N–CHANNEL ENHANCEMENT MODE HIGH VOLTAGE POWER MOSFETS

V_{DSS} 600V

$I_{D(cont)}$ 57A

$R_{DS(on)}$ 0.090Ω

Terminal 1 Source* **Terminal 2** Drain
Terminal 3 Gate **Terminal 4** Source*

* Source terminals are shorted internally. Current handling capability is equal for either Source terminal.

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C unless otherwise stated)

V_{DSS}	Drain – Source Voltage	600	V
I_D	Continuous Drain Current	57	A
I_{DM} , I_{LM}	Pulsed Drain Current [1] and Inductive Current Clamped	228	A
V_{GS}	Gate – Source Voltage	±30	V
P_D	Total Power Dissipation @ T_{case} = 25°C	690	W
	Linear Derating Factor	5.52	W / °C
T_J , T_{STG}	Operating and Storage Junction Temperature Range	–25 to 125	°C
T_L	Lead Temperature : 0.063” from Case for 10 Sec.	300	

STATIC ELECTRICAL RATINGS (T_{case} = 25°C unless otherwise stated)

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain – Source Breakdown Voltage	V_{GS} = 0V , I_D = 250µA	600			V
$I_{D(ON)}$	On State Drain Current [2]	$V_{DS} > I_{D(ON)} \times R_{DS(ON)}$ Max V_{GS} = 10V	57			A
$R_{DS(ON)}$	Drain – Source On State Resistance [2]	V_{GS} =10V , I_D = 0.5 I_D [Cont.]			0.090	Ω
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = V_{DSS}$			250	µA
	(V_{GS} = 0V)	$V_{DS} = 0.8V_{DSS}$, T_C = 125°C			1000	
I_{GSS}	Gate – Source Leakage Current	V_{GS} = ±30V , V_{DS} = 0V			±100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$, I_D = 5.0mA	2		4	V

1) Repetitive Rating: Pulse Width limited by maximum junction temperature.

2) Pulse Test: Pulse Width < 380µS , Duty Cycle < 2%

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DYNAMIC CHARACTERISTICS

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
C_{iss}	Input Capacitance	V_{GS} = 0V		11670	14000	pF
C_{oss}	Output Capacitance	V_{DS} = 25V		1810	2530	
C_{rss}	Reverse Transfer Capacitance	f = 1MHz		545	870	
Q_g	Total Gate Charge[3]	V_{GS} = 10V		446	670	nC
Q_{gs}	Gate – Source Charge	V_{DD} = 0.5 V_{DSS}		64	95	
Q_{gd}	Gate – Drain (“Miller”) Charge	I_D = I_D [Cont.] @ 25°C		208	315	
$t_{d(on)}$	Turn–on Delay Time	V_{GS} = 15V		22	45	ns
t_r	Rise Time	V_{DD} = 0.5 V_{DSS}		24	50	
$t_{d(off)}$	Turn-off Delay Time	I_D = I_D [Cont.] @ 25°C		65	95	
t_f	Fall Time	R_G = 0.6Ω		12	25	

SOURCE – DRAIN DIODE RATINGS AND CHARACTERISTICS

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current (Body Diode)				57	A
I_{SM}	Pulsed Source Current[1](Body Diode)				228	
V_{SD}	Diode Forward Voltage[2]	V_{GS} = 0V , I_S = – I_D [Cont.]			1.8	V
t_{rr}	Reverse Recovery Time	I_S = – I_D [Cont.]	400	800	1600	ns
Q_{rr}	Reverse Recovery Charge	dI_S / dt = 100A/µs	13	26	50	µC

PACKAGE CHARACTERISTICS

	Characteristic		Min.	Typ.	Max.	Unit
L_D	Internal Drain Inductance (Measured From Drain Terminal to Centre of Die)			3		nH
L_S	Internal Source Inductance (Measured From Source Terminals to Source Bond Pads)			5		
$V_{Isolation}$	RMS Voltage (50–60 Hz Sinusoidal Waveform From Terminals to Mounting Base for 1 Min.)		2500			V
$C_{Isolation}$	Drain-to-Mounting Base Capacitance	f = 1MHz		70		pF
Torque	Maximum Torque for Device Mounting Screws and Electrical Terminations				13	in–lbs

THERMAL CHARACTERISTICS

	Characteristic	Min.	Typ.	Max.	Unit
$R_{\theta JC}$	Junction to Case			0.18	°C/W
$R_{\theta CS}$	Case to Sink (Use High Efficiency Thermal Joint Compound and Planar Heat Sink Surface.)		0.05		

1) Repetitive Rating: Pulse Width limited by maximum junction temperature.

2) Pulse Test: Pulse Width < 380µS , Duty Cycle < 2%

3) See MIL–STD–750 Method 3471

CAUTION — Electrostatic Sensitive Devices. Anti-Static Procedures Must Be Followed.