SEME LAB

BFC14

4TH GENERATION MOSFET

N–CHANNEL
ENHANCEMENT MODE
HIGH VOLTAGE
ISOLATED
POWER MOSFETS

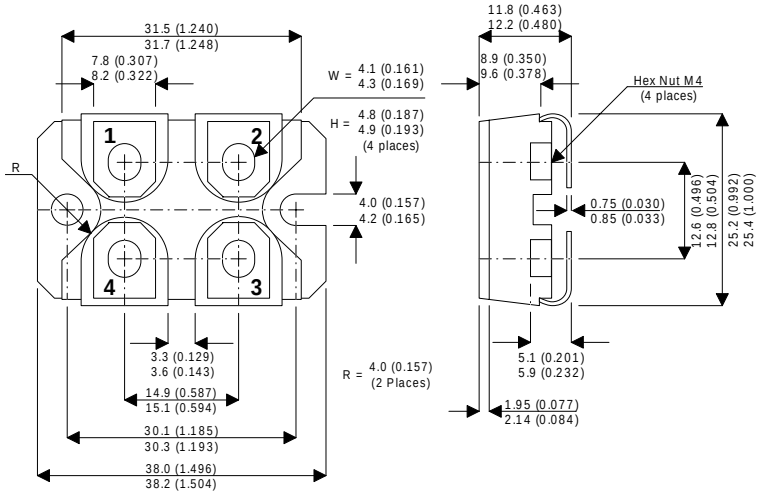
V_{DSS} 400V

$I_{D(cont)}$ 56A

$R_{DS(on)}$ 0.075Ω

SOT–227 Package Outline.

Dimensions in mm (inches)



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

* Source 2 may be omitted, shorted to Source 1 or used for Gate drive circuit.

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

V_{DSS}	Drain – Source Voltage	400	V
I_D	Continuous Drain Current	56	A
I_{DM} , I_{LM}	Pulsed Drain Current [1] and Inductive Current Clamped	224	A
V_{GS}	Gate – Source Voltage	±30	V
P_D	Total Power Dissipation @ T_{case} = 25°C	520	W
	Linear Derating Factor	4.16	W / °C
T_J , T_{STG}	Operating and Storage Junction Temperature Range	–55 to 150	°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	400			V
$I_{D(ON)}$	On State Drain Current [2]	$V_{DS} > I_{D(ON)} \times R_{DS(ON)}$ Max V_{GS} = 10V	56			A
$R_{DS(ON)}$	Drain – Source On State Resistance [2]	V_{GS} =10V , I_D = 0.5 I_D [Cont.]			0.075	Ω
I_{DSS}	Zero Gate Voltage Drain Current (V_{GS} = 0V)	V_{DS} = V_{DSS}			250	µA
		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 = 2.5mA	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		5630	6800	pF
C_{oss}	Output Capacitance	V_{DS} = 25V		1320	1950	
C_{rss}	Reverse Transfer Capacitance	f = 1MHz		510	720	
Q_g	Total Gate Charge[3]	V_{GS} = 10V		241	370	nC
Q_{gs}	Gate – Source Charge	V_{DD} = 0.5 V_{DSS}		34	50	
Q_{gd}	Gate – Drain (“Miller”) Charge	I_D = I_D [Cont.] @ 25°C		117	180	
$t_{d(on)}$	Turn–on Delay Time	V_{GS} = 15V		16	32	ns
t_r	Rise Time	V_{DD} = 0.5 V_{DSS}		31	62	
$t_{d(off)}$	Turn-off Delay Time	I_D = I_D [Cont.] @ 25°C		45	70	
t_f	Fall Time	R_G = 0.6Ω		13	26	

SOURCE – DRAIN DIODE RATINGS AND CHARACTERISTICS

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current (Body Diode)				56	A
I_{SM}	Pulsed Source Current[1](Body Diode)				224	
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.]	185	370	740	ns
Q_{rr}	Reverse Recovery Charge	dI_S / dt = 100A/µs	4	8	16	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		35		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			0.24	°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.