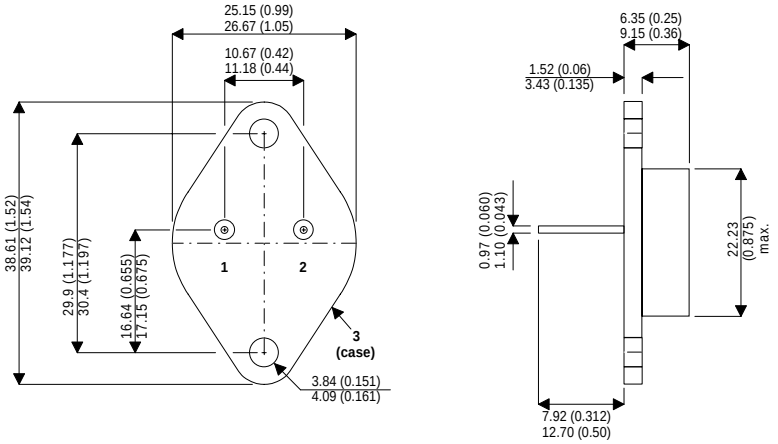
SEME LAB

BFD82

4TH GENERATION MOSFET

TO–3 (TO–204AA) Package Outline.

Dimensions in mm (inches)



Pin 1 – Gate **Pin 2 – Source** **Case – Drain**

N–CHANNEL
ENHANCEMENT MODE
HIGH VOLTAGE
POWER MOSFETS

V_{DSS} **500V**
$I_{D(cont)}$ **14.5A**
$R_{DS(on)}$ **0.40Ω**

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

V_{DSS}	Drain – Source Voltage	500	V
I_D	Continuous Drain Current	14.5	A
I_{DM}	Pulsed Drain Current [1]	58	A
V_{GS}	Gate – Source Voltage	±30	V
P_D	Total Power Dissipation @ T_{case} = 25°C	198	W
	Derate Linearly	1.584	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	500			V
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 = 1.0mA	2		4	V
$I_{D(ON)}$	On State Drain Current [2]	V_{DS} > $I_{D(ON)}$ x $R_{DS(ON)}$ Max V_{GS} = 10V	14.5			A
$R_{DS(ON)}$	Drain – Source On State Resistance [2]	V_{GS} = 10V , I_D = 0.5 I_D [Cont.]			0.40	Ω

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		1430	1800	pF
C_{oss}	Output Capacitance	V_{DS} = 25V		330	465	
C_{rss}	Reverse Transfer Capacitance	f = 1MHz		130	200	
Q_g	Total Gate Charge[3]	V_{GS} = 10V		64	105	nC
Q_{gs}	Gate – Source Charge	V_{DD} = 0.5 V_{DSS}		8.7	12	
Q_{gd}	Gate – Drain (“Miller”) Charge	I_D = I_D [Cont.] @ 25°C		34	51	
$t_{d(on)}$	Turn–on Delay Time	V_{GS} = 15V		12	24	ns
t_r	Rise Time	V_{DD} = 0.5 V_{DSS}		21	42	
$t_{d(off)}$	Turn-off Delay Time	I_D = I_D [Cont.] @ 25°C		51	77	
t_f	Fall Time	R_G = 1.8Ω		27	54	

SOURCE – DRAIN DIODE RATINGS AND CHARACTERISTICS

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	(Body Diode)			14.5	A
I_{SM}	Pulsed Source Current[1]	(Body Diode)			58	
V_{SD}	Diode Forward Voltage[2]	V_{GS} = 0V , I_S = – I_D [Cont.]			1.3	V
t_{rr}	Reverse Recovery Time	I_S = – I_D [Cont.] , dI_s / dt = 100A/µs	148	296	592	ns
Q_{rr}	Reverse Recovery Charge	I_S = – I_D [Cont.] , dI_s / dt = 100A/µs	2.2	4.4	8.8	µC

SAFE OPERATING AREA CHARACTERISTICS

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
SOA1	Safe Operating Area	V_{DS} = 0.4V_{DSS} , t = 1 Sec. I_{DS} = P_D / 0.4V_{DSS}	198			W
SOA2	Safe Operating Area	V_{DS} = P_D / I_D [Cont.] I_{DS} = I_D [Cont.] , t = 1 Sec.	198			W
I_{LM}	Inductive Current Clamped		58			A

THERMAL CHARACTERISTICS

	Characteristic	Min.	Typ.	Max.	Unit
$R_{\theta JC}$	Junction to Case			0.63	°C/W
$R_{\theta JA}$	Junction to Ambient			30	

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.

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