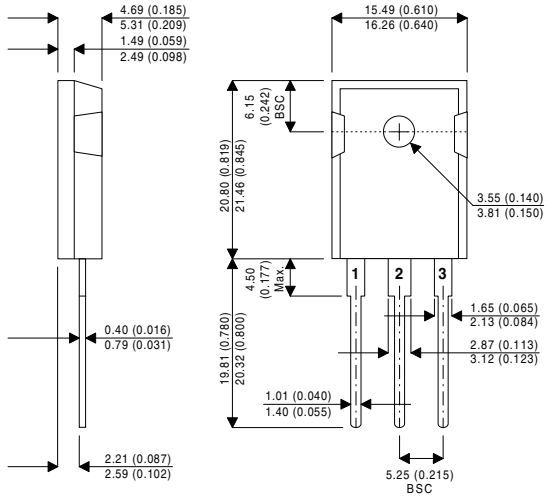
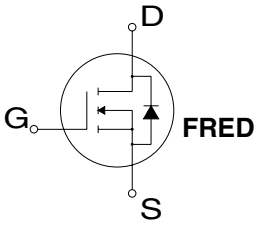
SML80B16F

TO–247AD Package Outline.

Dimensions in mm (inches)



Pin 1 – Gate **Pin 2 – Drain** **Pin 3 – Source**



N–CHANNEL ENHANCEMENT MODE HIGH VOLTAGE POWER MOSFETS

V_{DSS} 800V

$I_{D(cont)}$ 16A

$R_{DS(on)}$ 0.560Ω

- **Faster Switching**
- **Lower Leakage**
- **100% Avalanche Tested**
- **Popular TO–247 Package**
- **Fast Recovery Diode Onboard**

StarMOS is a new generation of high voltage N–Channel enhancement mode power MOSFETs. This new technology minimises the JFET effect, increases packing density and reduces the on-resistance. StarMOS also achieves faster switching speeds through optimised gate layout.

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

V_{DSS}	Drain – Source Voltage	800	V
I_D	Continuous Drain Current	16	A
I_{DM}	Pulsed Drain Current [1]	64	A
V_{GS}	Gate – Source Voltage	±30	V
V_{GSM}	Gate – Source Voltage Transient	±40	
P_D	Total Power Dissipation @ T_{case} = 25°C	370	W
	Derate Linearly	2.96	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	
I_{AR}	Avalanche Current[1] (Repetitive and Non-Repetitive)	16	A
E_{AR}	Repetitive Avalanche Energy [1]	30	mJ
E_{AS}	Single Pulse Avalanche Energy [2]	1300	

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SEME LAB

SML80B16F

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	800			V
I_{DSS}	Zero Gate Voltage Drain Current (V_{GS} = 0V)	V_{DS} = V_{DSS}			25	µA
		V_{DS} = 0.8V_{DSS} , T_C = 125°C			250	
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	16			A
$R_{DS(ON)}$	Drain – Source On State Resistance [2]	V_{GS} = 10V , I_D = 0.5 I_D [Cont.]			0.56	Ω

DYNAMIC CHARACTERISTICS

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
C_{iss}	Input Capacitance	V_{GS} = 0V		3700		pF
C_{oss}	Output Capacitance	V_{DS} = 25V		370		
C_{rss}	Reverse Transfer Capacitance	f = 1MHz		180		
Q_g	Total Gate Charge[4]	V_{GS} = 10V		185		nC
Q_{gs}	Gate – Source Charge	V_{DD} = 0.5 V_{DSS}		16		
Q_{gd}	Gate – Drain (“Miller”) Charge	I_D = I_D [Cont.] @ 25°C		90		
$t_{d(on)}$	Turn–on Delay Time	V_{GS} = 15V		12		ns
t_r	Rise Time	V_{DD} = 0.5 V_{DSS}		10		
$t_{d(off)}$	Turn-off Delay Time	I_D = I_D [Cont.] @ 25°C		43		
t_f	Fall Time	R_G = 1.6Ω		10		

SOURCE – DRAIN DIODE RATINGS AND CHARACTERISTICS

	Characteristic	Test Conditions		Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	(Body Diode)				16	A
I_{SM}	Pulsed Source Current[1]	(Body Diode)				64	
V_{SD}	Diode Forward Voltage[3]	V_{GS} = 0V , I_S = – I_D [Cont.]				1.3	V
dv / dt	Peak Diode Recovery [5]					5	V/ns
t_{rr}	Reverse Recovery Time	I_S = – I_D [Cont.]	T_J = 25°C			200	ns
		dI / dt = 100A/µs	T_J = 125°C			400	
Q_{rr}	Reverse Recovery Charge	I_S = – I_D [Cont.]	T_J = 25°C		0.8		µC
		dI / dt = 100A/µs	T_J = 125°C		2.9		
I_{rrm}	Peak Recovery Current	I_S = – I_D [Cont.]	T_J = 25°C		10		A
		dI / dt = 100A/µs	T_J = 125°C		18		

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THERMAL CHARACTERISTICS

	Characteristic	Min.	Typ.	Max.	Unit
$R_{\theta JC}$	Junction to Case			0.34	°C/W
$R_{\theta JA}$	Junction to Ambient			40	

1) Repetitive Rating: Pulse Width limited by maximum junction temperature.
2) Starting T_J = 25°C, L = 10.16mH, R_G = 25Ω, Peak I_L = 16A
3) Pulse Test: Pulse Width < 380μS , Duty Cycle < 2%
4) See MIL–STD–750 Method 3471
5) Iss - I_D [Cont.] di/st = 100A/μs, $V_{DD} \leq V_{DSS,}$ $T_j \leq 150°C$, R_G = 2.0 Ω, V_R = 200V

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