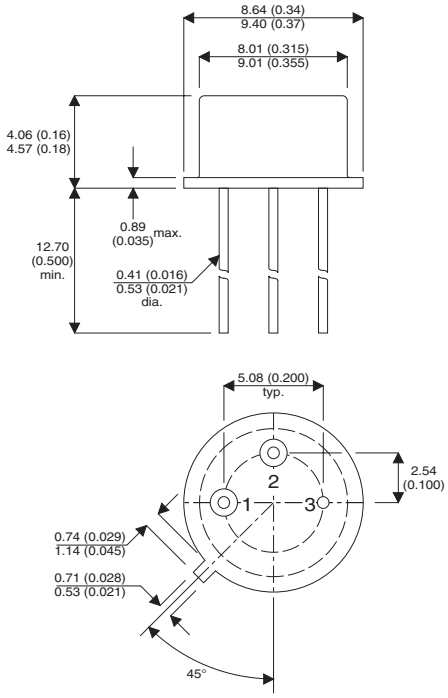
2N6800

MECHANICAL DATA
Dimensions in mm (inches)



TO39 – Package (TO205AF)

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

N–CHANNEL ENHANCEMENT POWER MOSFET

BV_{DSS}	400V
I_D	3.0A
$R_{DS(on)}$	1.0Ω

FEATURES

- **AVALANCHE ENERGY RATED**
- **HERMETICALLY SEALED**
- **DYNAMIC dv/dt RATING**
- **SIMPLE DRIVE REQUIREMENTS**

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

V_{GS}	Gate – Source Voltage		±20V
I_D	Continuous Drain Current	(V_{GS} = 10V , T_{case} = 25°C)	3A
I_D	Continuous Drain Current	(V_{GS} = 10V , T_{case} = 100°C)	2A
I_{DM}	Pulsed Drain Current [1]		12A
P_D	Power Dissipation @ T_{case} = 25°C		25W
	Linear Derating Factor		0.20W/°C
dv/dt	Peak Diode Recovery [3]		4V/ns
T_J , T_{stg}	Operating and Storage Temperature Range		–55 to 150°C
$R_{\theta JC}$	Thermal Resistance Junction to Case		5.0°C/W
$R_{\theta JCA}$	Thermal Resistance Junction-to-Ambient		175°C/W

Notes

1) Pulse Test: Pulse Width ≤ 300μs, δ ≤ 2%

2) @ V_{DD} = 50V , L ≥ 0.100mH , R_G = 25Ω , Peak I_L = 1.5A , Starting T_J = 25°C

3) @ I_{SD} ≤ 1.5A , di/dt ≤ 50A/μs , V_{DD} ≤ BV_{DSS} , T_J ≤ 150°C , SUGGESTED R_G = 7.5Ω

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Document Number 3097
Issue 1

SEME LAB

2N6800

ELECTRICAL CHARACTERISTICS (T_{amb} = 25°C unless otherwise stated)

	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
	STATIC ELECTRICAL RATINGS					
BV_{DSS}	Drain – Source Breakdown Voltage	V_{GS} = 0 I_D = 1mA	400			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I_D = 1mA		0.37		V/°C
$R_{DS(on)}$	Static Drain to Source On–State Resistance	V_{GS} = 10V I_D = 2A			1	Ω
		V_{GS} = 10V I_D = 3A			1.15	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS} I_D = 250µA	2		4	V
g_{fs}	Forward Transconductance	V_{DS} ≥ 15V I_{DS} = 2A	2			S(℧)
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 0.8xMax Rating			25	µA
		V_{GS} = 0 T_J = 125°C			250	
I_{GSS}	Forward Gate – Source Leakage	V_{GS} = 20V			100	nA
I_{GSS}	Reverse Gate – Source Leakage	V_{GS} = –20V			–100	
	DYNAMIC CHARACTERISTICS					
C_{iss}	Input Capacitance	V_{GS} = 0		620		pF
C_{oss}	Output Capacitance	V_{DS} = 25V		200		
C_{rss}	Reverse Transfer Capacitance	f = 1MHz		75		
Q_g	Total Gate Charge	V_{GS} = 10V I_D = 3A V_{DS} = Max Rating x 0.5	19.1		33	nC
Q_{gs}	Gate – Source Charge		1		5.8	
Q_{gd}	Gate – Drain (“Miller”) Charge		6.7		19.9	
$t_{d(on)}$	Turn–On Delay Time	V_{DD} = 200V V_{GS} = 10V I_D = 3A R_G = 7.5Ω			30	ns
t_r	Rise Time				35	
$t_{d(off)}$	Turn–Off Delay Time				55	
t_f	Fall Time				35	
	SOURCE – DRAIN DIODE CHARACTERISTICS					
I_S	Continuous Source Current				3	A
I_{SM}	Pulse Source Current [2]				12	
V_{SD}	Diode Forward Voltage	I_S = 3.0A T_J = 25°C V_{GS} = 0			1.4	V
t_{rr}	Reverse Recovery TimeReverse	I_F = 3.0A T_J = 25°C			700	ns
Q_{rr}	Recovery Charge	d_i / d_t ≤ 100A/µs V_{DD} ≤ 50V			6.2	
t_{on}	Forward Turn–On Time			Negligible		µC
	PACKAGE CHARACTERISTICS					
L_D	Internal Drain Inductance (from centre of drain pad to die)			5		nH
L_S	Internal Source Inductance (from centre of source pad to end of source bond wire)			15		

Notes 1) Pulse Test: Pulse Width ≤ 300µs, δ ≤ 2%

2) Repetitive Rating – Pulse width limited by maximum junction temperature.

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