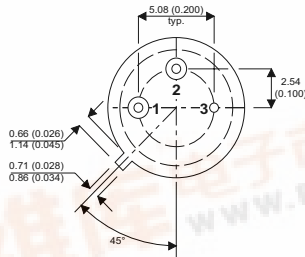
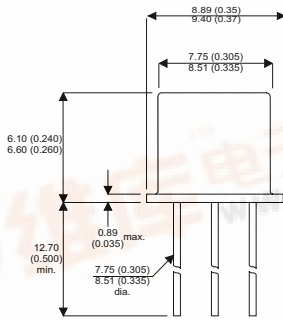




2N6800

MECHANICAL DATA

Dimensions in mm (inches)



TO39 – Package

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

Also available in a low profile version.

**N-CHANNEL
POWER MOSFET**

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

FEATURES

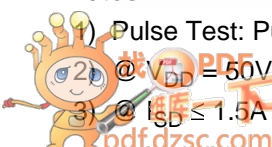
- AVALANCHE ENERGY RATED
- HERMETICALLY SEALED
- DYNAMIC dv/dt RATING
- SIMPLE DRIVE REQUIREMENTS

ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^\circ C$ unless otherwise stated)

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

Notes

- 1) Pulse Test: Pulse Width $\leq 300\mu s, \delta \leq 2\%$
 @ $V_{DD} = 50V, L \geq 0.100mH, R_G = 25\Omega, Peak I_L = 1.5A, Starting T_J = 25^\circ C$
- 2) $I_{SD} \leq 1.5A, di/dt \leq 50A/\mu s, V_{DD} \leq BV_{DSS}, T_J \leq 150^\circ C, SUGGESTED R_G = 7.5\Omega$



ELECTRICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
STATIC ELECTRICAL RATINGS					
BV_{DSS}	Drain – Source Breakdown Voltage	$V_{GS} = 0$ $I_D = 1\text{mA}$	400		V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C $I_D = 1\text{mA}$		0.37	$\text{V}/^{\circ}\text{C}$
$R_{DS(on)}$	Static Drain to Source On–State Resistance	$V_{GS} = 10\text{V}$ $I_D = 2\text{A}$		1	Ω
		$V_{GS} = 10\text{V}$ $I_D = 3\text{A}$		1.15	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$ $I_D = 250\mu\text{A}$	2	4	V
g_{fs}	Forward Transconductance	$V_{DS} \geq 15\text{V}$ $I_{DS} = 2\text{A}$	2		$\text{S}(\bar{\omega})$
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 0.8 \times \text{Max Rating}$		25	μA
		$V_{GS} = 0$	$T_J = 125^{\circ}\text{C}$	250	
I_{GSS}	Forward Gate – Source Leakage	$V_{GS} = 20\text{V}$		100	nA
I_{GSS}	Reverse Gate – Source Leakage	$V_{GS} = -20\text{V}$		-100	
DYNAMIC CHARACTERISTICS					
C_{iss}	Input Capacitance	$V_{GS} = 0$		620	pF
C_{oss}	Output Capacitance	$V_{DS} = 25\text{V}$		200	
C_{rss}	Reverse Transfer Capacitance	$f = 1\text{MHz}$		75	
Q_g	Total Gate Charge	$V_{GS} = 10\text{V}$ $I_D = 3\text{A}$ $V_{DS} = \text{Max Rating} \times 0.5$	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	$V_{DD} = 200\text{V}$ $V_{GS} = 10\text{V}$ $I_D = 3\text{A}$ $R_G = 7.5\Omega$		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	$I_S = 3.0\text{A}$ $T_J = 25^{\circ}\text{C}$ $V_{GS} = 0$		1.4	V
t_{rr}	Reverse Recovery Time Reverse	$I_F = 3.0\text{A}$ $T_J = 25^{\circ}\text{C}$		700	ns
Q_{rr}	Recovery Charge	$d_i / d_t \leq 100\mu\text{A}/\mu\text{s}$ $V_{DD} \leq 50\text{V}$		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 $\leq 300\mu\text{s}$, $\delta \leq 2\%$
- 2) Repetitive Rating – Pulse width limited by maximum junction temperature.