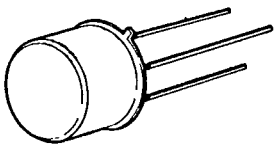
SEMELAB

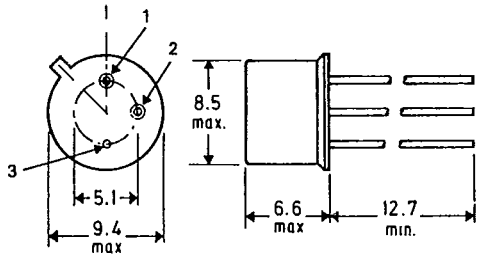


2N 6801
2N 6802

MECHANICAL DATA

Dimensions in mm

MOS POWER
N-Channel Enhancement Mode



APPLICATIONS

- FAST SWITCHING
- MOTOR CONTROLS
- POWER SUPPLIES

PIN 1 – Source PIN 2 – Gate PIN 3 Drain and Case

T039

ABSOLUTE MAXIMUM RATINGS (T_{CASE} = 25°C unless otherwise specified)

	Parameter	2N 6801	2N 6802
V_{DS}	Drain source voltage	450V	500V
V_{DGR}	Drain gate voltage (R_{GS} = 1 MΩ)	450V	500V
I_D @ T_C = 25°C	Continuous drain current	±2·5A	
I_D @ T_C = 100°C	Continuous drain current	±1·5A	
I_{DM}	Pulsed drain current (i)	±5A	
V_{GS}	Gate-source voltage	±40V	
P_D @ T_C = 25°C	Maximum power dissipation	25W	
P_D @ T_C = 100°C	Maximum power dissipation	10W	
Junction to case	Linear derating factor	0·2 W/°C	
Junction to ambient	Linear derating factor	0·005 W/°C	
T_j / T_{stg}	Operating and storage temperature range	−55 to 150°C	
Lead temperature	(1/16" from case for 10 secs.)	300°C	

(i) Pulse test: Pulse width ≤300μsec, duty cycle ≤2%

2N 6801 2N 6802

SEMELAB

ELECTRICAL CHARACTERISTICS (T_{CASE} = 25°C unless otherwise specified)

STATIC

Parameter		Type	Min.	Typ.	Max.	Units	Test Conditions
BV_{DSS}	Drain-Source Breakdown Voltage	2N6801	450*			V	V_{GS} = 0, I_D = 1.0 mA
		2N6802	500*			V	
$V_{GS(th)}$	Gate-Threshold Voltage	All	2.0*		4.0	V	V_{DS} = V_{GS}, I_D = 1.0 mA
I_{GSSF}	Gate-Body Leakage Forward	All			100*	nA	V_{GS} = 20V
I_{GSSR}	Gate-Body Leakage Reverse	All			−100	nA	V_{GS} = −20V
I_{DSS}	Zero Gate Voltage Drain Current	All			1*	mA	V_{DS} = Max. Rating, V_{GS} = 0
		All			4.0*	mA	V_{DS} = Max. Rating, V_{GS} = 0, T_C = 125°C
$I_{D(on)}$	On-State Drain Current[1]	2N6801	2.5			A	V_{DS} > 2 $V_{DS(ON)}$, I_D = 1.5A
		2N6802	2.5			A	V_{DS} > 2 $V_{DS(ON)}$, I_D = 1.5A
$V_{DS(on)}$	Static Drain-Source On-State Voltage[1]	2N6801			3.75*	V	V_{GS} = 10V , I_D = 2.5A
		2N6802			3.75*	V	V_{GS} = 10V , I_D = 2.5A
$R_{DS(on)}$	Static Drain-Source On-State Resistance[1]	2N6801			1.5*	Ω	V_{GS} = 10V , I_D = 1.5A
		2N6802			1.5*	Ω	V_{GS} = 10V , I_D = 1.5A
$R_{DS(on)}$	Static Drain-Source On-State Resistance[1]	2N6801			3.5*	Ω	V_{GS} =10V, I_D =1.5A, T_C =125°C
		2N6802			3.5*	Ω	V_{GS} =10V, I_D =1.5A, T_C =125°C

DYNAMIC

g_{fs}	Forward Transductance[1]	All	1.5*		4.5*	S (℧)	V_{DS} > 2 $V_{DS(ON)}$, I_D = 1.5A
C_{iss}	Input Capacitance	All	350*		900*	pF	V_{GS} = 0 , V_{DS} = 25V, f = 1 MHz
C_{oss}	Output Capacitance	All	25*		200*	pF	
C_{rss}	Reverse Transfer Capacitance	All	15*		60*	pF	
$t_{d(on)}$	Turn-On Delay Time	All			30*	ns	V_{DD} =225V, I_D ≅ 1.5A, R_g = 7.5Ω , R_L = 150Ω (MOS FET switching times are essentially independent of operating temperature.)
t_r	Rise Time	All			30*	ns	
$t_{d(off)}$	Turn-Off Delay Time	All			55*	ns	
t_f	Fall Time	All			30*	ns	

THERMAL RESISTANCE

R_{thJC}	Junction-to-Case	All			5.0*	°C/W	
R_{thJA}	Junction-to-Ambient	All			170	°C/W	Free Air Operation

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

I_S	Continuous Source Current (Body Diode)	2N6801			−5	A	Modified MOS POWER symbol showing the intergal P-N junction rectifer. 
		2N6802			−5	A	
I_{SM}	Source Current[1] (Body Diode)	2N6801			−2.5	A	
		2N6802			−2.5	A	
V_{SD}	Diode Forward Voltage[1]	2N6801	−0.7		−1.4*	V	T_C=25°C, I_S=−2.5A, V_{GS} = 0
		2N6802	−0.7		−1.4*	V	T_C=25°C, I_S=−2.5A, V_{GS} = 0
t_{rr}	Reverse Recovery Time	All		400		ns	T_J =150°C , I_F = I_S, dI_F/dt = 100 A/μs

1 Pulse Test: Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%