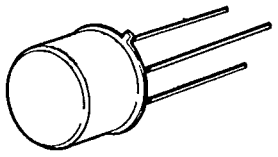
JAN 05 1988 SMLB

SEMELAB

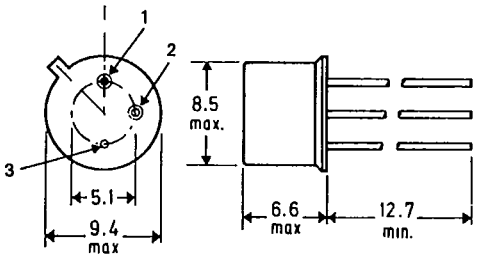


2N 6785
2N 6786

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

TO 39

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

	Parameter	2N 6785	2N 6786
V_{DS}	Drain source voltage	350V	400V
V_{DGR}	Drain gate voltage (R_{GS} = 1 MΩ)	350V	400V
I_D @ T_C = 25°C	Continuous drain current	±1·25A	
I_D @ T_C = 100°C	Continuous drain current	±0·8A	
I_{DM}	Pulsed drain current (i)	±2·5A	
V_{GS}	Gate-source voltage	±40V	
P_D @ T_C = 25°C	Maximum power dissipation	15W	
P_D @ T_C = 100°C	Maximum power dissipation	6W	
Junction to case	Linear derating factor	0·12 W/°C	
Junction to ambient	Linear derating factor	0·005 W/°C	
T_J	Operating and	−55 to 150°C	
T_{stg}	storage temperature range		
Lead temperature	(1/16" from case for 10 secs.)	300°C	

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

2N 6785 2N 6786

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	2N6785	350			V	V_{GS} = 0 I_D = 0.25 mA
		2N6786	400			V	
$V_{GS(th)}$	Gate-Threshold Voltage	All	2* 1*		4.0*	V	V_{DS} = V_{GS}, I_D = 0.5A V_{DS}=V_{GS},I_D=0.5mA@T_A=125°C
I_{GSSF}	Gate-Body Leakage Forward	All			100* 200*	nA	V_{GS} = 20V V_{GS} = 20V, @T_A = 125°C
I_{GSSR}	Gate-Body Leakage Reverse	All			−100*	nA	V_{GS} = −20V
I_{DSS}	Zero Gate Voltage Drain Current	All			0.25*	mA	V_{DS} = Max. Rating, V_{GS} = 0
		All			1*	mA	V_{DS}=0.8 Max. Rating, V_{GS} = 0 T_C = 125°C
$I_{D(on)}$	On-State Drain Current[1]	2N6785	1.25			A	V_{DS}>2$V_{DS(ON)}$, V_{GS} = 10V
		2N6786	1.25			A	V_{DS}>2$V_{DS(ON)}$, V_{GS} = 10V
$V_{DS(on)}$	Static Drain-Source On-State Voltage[1]	2N6785			4.5*	V	V_{GS} = 10V , I_D = 1.25
		2N6786			4.5*	V	V_{GS} = 10V , I_D = 1.25
$R_{DS(on)}$	Static Drain-Source On-State Resistance[1]	2N6785			3.6*	Ω	V_{GS} = 10V , I_D = 0.8A
		2N6786			3.6*	Ω	V_{GS} = 10V , I_D = 0.8A
$R_{DS(on)}$	Static Drain-Source On-State Resistance[1]	2N6785			7.92*	Ω	V_{GS} =10V, I_D =0.8A, T_C =125°C
		2N6786			7.92*	Ω	V_{GS} =10V, I_D =0.8A, T_C =125°C

DYNAMIC

g_{fs}	Forward Transductance[1]	All	0.7*		2.1*	S (℧)	V_{DS}>2$V_{DS(ON)}$, I_D = 0.8A
C_{iss}	Input Capacitance	All	60		200	pF	V_{GS} = 0 , V_{DS} = 25V f = 1 MHz
C_{oss}	Output Capacitance	All	15		50	pF	
C_{rss}	Reverse Transfer Capacitance	All	2		15	pF	
$t_{d(on)}$	Turn-On Delay Time	All			15*	ns	V_{DD} =170V, I_D ≅ 0.8A R_g = 25Ω , R_L = 210Ω (MOS FET switching times are essentially independent of operating temperature.)
t_r	Rise Time	All			20*	ns	
$t_{d(off)}$	Turn-Off Delay Time	All			35*	ns	
t_f	Fall Time	All			30*	ns	

THERMAL RESISTANCE

R_{thJC}	Junction-to-Case	All			8.33*	°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)	2N6785			−1.25*	A	Modified MOS POWER symbol showing the intergal P-N junction rectifer.
		2N6786			−1.25*	A	
I_{SM}	Source Current[1] (Body Diode)	2N6785			−2.5	A	
		2N6786			−2.5	A	
V_{SD}	Diode Forward Voltage[1]	2N6785	−0.6*		−1.4*	V	T_C=25°C,I_S=−1.25A,V_{GS}=0
		2N6786	−0.6*		−1.4*	V	T_C=25°C,I_S=−1.25A,V_{GS}=0
t_{rr}	Reverse Recovery Time	All		380		ns	T_J =150°C , I_F = I_S, dI_F/ds = 100 A/μs

1 Pulse Test: Pulse Width < 300 μsec, Duty Cycle < 2%
*JEDEC Registered Values