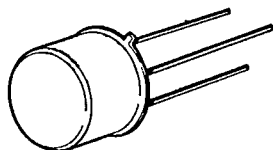
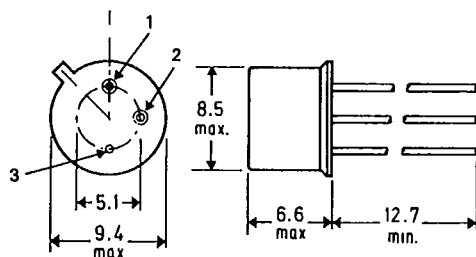


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SMLB

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

T039

ABSOLUTE MAXIMUM RATINGS ($T_{CASE} = 25^{\circ}\text{C}$ unless otherwise specified)

Parameter		2N 6785	2N 6786
V_{DS}	Drain source voltage	350V	400V
V_{DGR}	Drain gate voltage ($R_{GS} = 1\text{ M}\Omega$)	350V	400V
$I_D @ T_C = 25^{\circ}\text{C}$	Continuous drain current	$\pm 1.25\text{A}$	
$I_D @ T_C = 100^{\circ}\text{C}$	Continuous drain current	$\pm 0.8\text{A}$	
I_{DM}	Pulsed drain current (i)	$\pm 2.5\text{A}$	
V_{GS}	Gate-source voltage	$\pm 40\text{V}$	
$P_D @ T_C = 25^{\circ}\text{C}$	Maximum power dissipation	15W	
$P_D @ T_C = 100^{\circ}\text{C}$	Maximum power dissipation	6W	
Junction to case	Linear derating factor	0.12 W/ $^{\circ}\text{C}$	
Junction to ambient	Linear derating factor	0.005 W/ $^{\circ}\text{C}$	
T_J	Operating and	-55 to 150 $^{\circ}\text{C}$	
T_{stg}	storage temperature range		
Lead temperature	(1/16" from case for 10 secs.)	300 $^{\circ}\text{C}$	

(i) Pulse test: Pulse width $\leq 300\mu\text{sec}$, duty cycle $\leq 2\%$

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2N 6785 2N 6786

SEMELAB**ELECTRICAL CHARACTERISTICS** ($T_{CASE} = 25^{\circ}\text{C}$ 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 = 0.5 A V _{DS} = V _{GS} , I _D = 0.5 mA @ 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} ≥ 2V _{DS(ON)} , V _{GS} = 10V
	2N6786	1.25			A	V _{DS} ≥ 2V _{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 _f Forward Transconductance ¹	All	0.7*		2.1*	S (U)	V _{DS} ≥ 2V _{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 integral P-N junction rectifier. 
	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

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