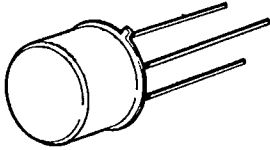
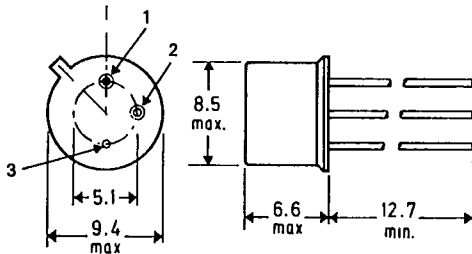


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SMLB

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

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

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

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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 _{DS} = 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		4.6*	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 Transconductance ¹	All	0.7*	2.1*	S (Ω)	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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