

TMB166S-L

November, 2005

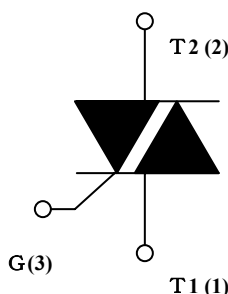
■Features

- Maximum junction and storage temperatures: 150°C
- Isolation Voltage : AC1800V

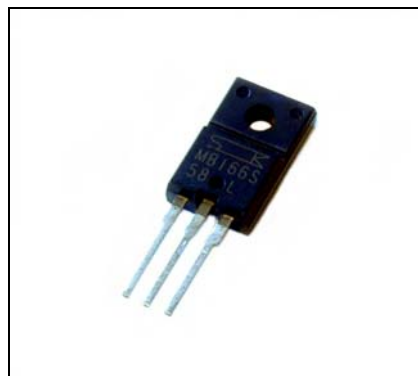
■Applications

- Lamp Heater Control (LBP, PPC, FAX)
- AC Motor Drive (Washing machine)

■Equivalent circuit



■Package---TO220 Full Mold



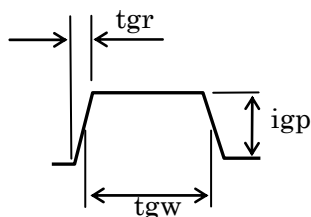
■Absolute maximum ratings

Item	Symbol	Unit	Conditions	Rating
Repetitive Peak Off-State Voltage	V_{DRM}	V	$R_{G-T1}=\infty$	600
Non-Repetitive Peak Off-State Voltage	V_{DSM}	V	$R_{G-T1}=\infty$	700
RMS On-State Current	$I_{T(RMS)}$	A	50Hz / 60Hz full cycle sine wave, Conduction angle $\theta=360^\circ$, $T_c=94^\circ\text{C}$	16
Surge On-State Current	I_{TSM}	A	Full cycle sine wave ,Peak value, Non-Repetitive, Initial $T_j=150^\circ\text{C}$	$f=60\text{Hz}$ 168
				$f=50\text{Hz}$ 160
I^2t Value	I^2t	$\text{A}^2\cdot\text{s}$	Value for 50Hz half cycle sine wave 1Cycle Surge on-state current	128
Critical Rising Rate of On-State Current	di/dt	$\text{A}/\mu\text{s}$	$I_T=I_{T(RMS)} \times \sqrt{2}$, $V_D=V_{DRM} \times 0.5$ $f \leq 60\text{Hz}$, $t_{gw} \geq 10\mu\text{s}$, $t_{gr} \leq 250\text{ns}$ $i_{gp} \geq 60\text{mA}^{*1}$	25
Peak Gate Current	I_{GM}	A	$f \geq 50\text{Hz}$, duty $\leq 10\%$	2
Peak Gate Power Dissipation	P_{GM}	W	$f \geq 50\text{Hz}$, duty $\leq 10\%$	5
Average Gate Power Dissipation	$P_{G(AV)}$	W		0.5
Junction Temperature	T_j	$^\circ\text{C}$		-40 to 150
Storage Temperature	T_{stg}	$^\circ\text{C}$		-40 to 150
Isolation Voltage	V_{ISO}	V	AC RMS applied for 1 minute to between leads and the case	1800

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*1. Gate trigger wave form



■Electrical characteristics

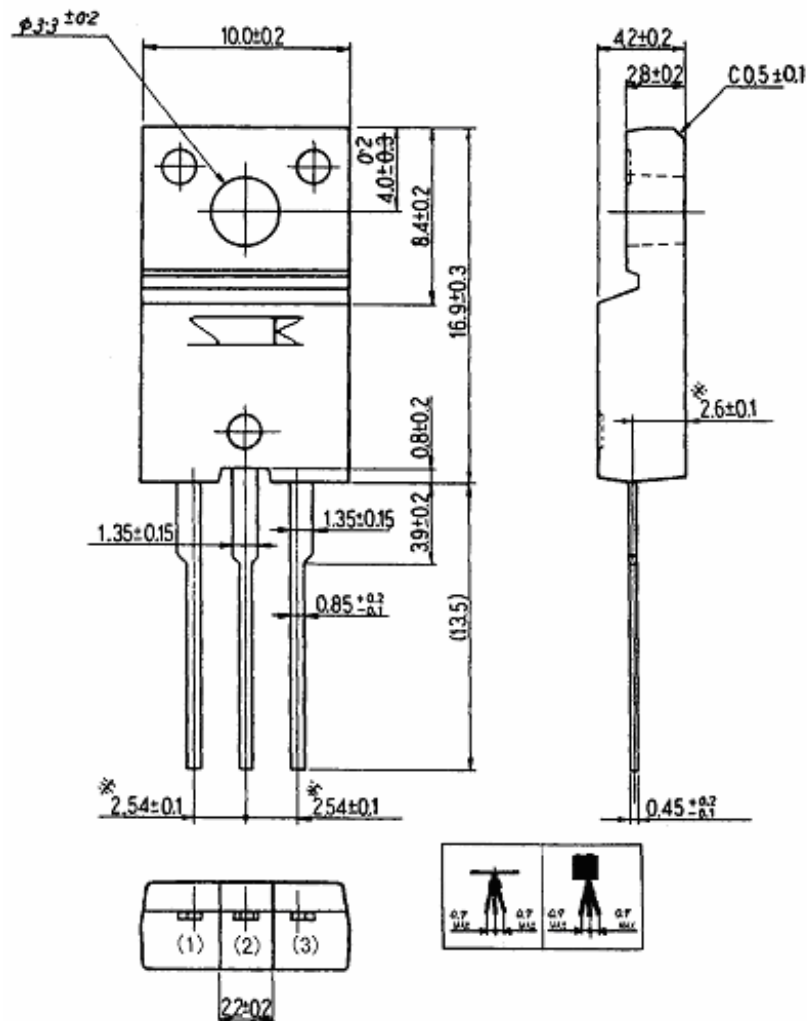
Item		Symbol	Unit	Conditions		Limits		
						Min.	Typ.	Max.
Off-State Leakage Current		I_{DRM}	mA	$V_D=V_{DRM}$, $T_j=150^\circ\text{C}$, $R_{G-T1}=\infty$		-	-	2.0
			μA	$V_D=V_{DRM}$, $T_j=25^\circ\text{C}$, $R_{G-T1}=\infty$		-	-	100
On-State Voltage		V_{TM}	V	$I_T=20\text{A}$, $T_j=25^\circ\text{C}$		-	-	1.45
Gate Trigger Voltage	I	V_{GT}	V	$V_D=12\text{V}$	T_2^+, G^+	-	-	1.5
	II			$R_L=20\Omega$	T_2^+, G^-	-	-	1.5
	III			$T_j=25^\circ\text{C}$	T_2^-, G^-	-	-	1.5
Gate Trigger Current	I	I_{GT}	mA	$V_D=12\text{V}$	T_2^+, G^+	-	-	30
	II			$R_L=20\Omega$	T_2^+, G^-	-	-	30
	III			$T_j=25^\circ\text{C}$	T_2^-, G^-	-	-	30
Gate Non-trigger Voltage		V_{GD}	V	$V_D=V_{DRM} \times 1/2$, $R_L=4\text{k}\Omega$ $T_j=125^\circ\text{C}$		0.2	-	-
Critical Rising Rate of Off-State Voltage in Commutating		$(dv/dt)_c$	V/ μs	$V_D=400\text{V}$, $(di/dt)_c=-10\text{A/ms}$ $I_{TP}=2\text{A}$, $T_j=125^\circ\text{C}$		10	-	-
Critical Rising Rate of Off-State Voltage		dv/dt	V/ μs	$V_D=V_{DRM} \times 2/3$, $R_{G-T1}=\infty$ $T_j=125^\circ\text{C}$		30	-	-
Thermal Resistance		$R_{th(j-c)}$	$^\circ\text{C/W}$	Junction to case for AC		-	-	3.0

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■External Dimensions

FM20 (TO220 Full Mold)



Mass: Approx. 2.0g

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