

9097250 TOSHIBA (DISCRETE/OPTO)

99D 16892 DT-39-11



SEMICONDUCTOR

TECHNICAL DATA

TOSHIBA FIELD EFFECT TRANSISTOR  
YTF830  
SILICON N CHANNEL MOS TYPE  
( $\pi$ -MOS II)

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS.  
CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR  
DRIVE APPLICATIONS.

## FEATURES:

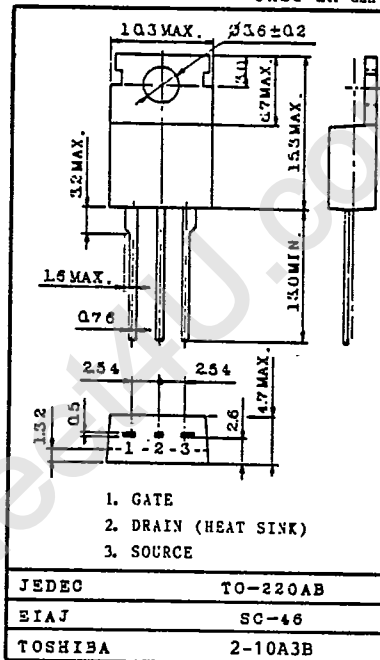
- Low Drain-Source ON Resistance :  $R_{DS(ON)}=1.3\Omega$  (Typ.)
- High Forward Transfer Admittance :  $|Y_{fs}|=3.25S$  (Typ.)
- Low Leakage Current :  $I_{GSS}=\pm 50nA$ (Max.) @  $V_{GS}=\pm 20V$   
 $I_{DSS}=250\mu A$ (Max.) @  $V_{DS}=500V$
- Enhancement-Mode :  $V_{th}=2.0\sim 4.0V$  @  $V_{DS}=V_{GS}, I_D=250\mu A$

MAXIMUM RATINGS ( $T_a=25^\circ C$ )

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		$V_{DSX}$	500	V
Drain-Gate Voltage ( $R_{GS}=1M\Omega$ )		$V_{DGR}$	500	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Drain Current	DC( $T_c=25^\circ C$ )	$I_D$	4.5	A
	DC( $T_c=100^\circ C$ )	$I_D$	3	
	Pulse	$I_{DP}$	18	
Inductive Current (Clamped)		$I_{LP}$	18	A
Drain Power Dissipation ( $T_c=25^\circ C$ )		$P_D$	75	W
Channel Temperature		$T_{ch}$	150	$^\circ C$
Storage Temperature Range		$T_{stg}$	$-55\sim 150$	$^\circ C$

## INDUSTRIAL APPLICATIONS

Unit in mm



Weight : 1.9g

## THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Junction to Case	$R_{th(j-c)}$	1.67	$^\circ C/W$
Thermal Resistance, Junction to Ambient	$R_{th(j-a)}$	80	$^\circ C/W$
Maximum Lead Temperature for Soldering Purposes (1.6mm from case for 10 seconds)	$T_L$	300	$^\circ C$

TOSHIBA CORPORATION

GT1A2

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## ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Gate Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 500$	nA	
Drain Cut-off Current	$I_{DSS}$	$V_{DS}=500V, V_{GS}=0V, T_c=25^\circ C$	-	-	250	$\mu A$	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=250\mu A, V_{GS}=0V$	500	-	-	V	
Gate Threshold Voltage	$V_{th}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	-	4.0	V	
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS}=10V, I_D=2.5A$	2.5	3.25	-	S	
On-State Drain Current	$I_{D(ON)}$	$V_{DS}=10V, V_{GS}=10V$	4.5	-	-	A	
Drain-Source ON Resistance	$R_{DS(ON)}$	$I_D=2.5A, V_{GS}=10V$	-	1.3	1.5	$\Omega$	
Drain-Source ON Voltage	$V_{DS(ON)}$	$I_D=4.5A, V_{GS}=10V$	-	6.4	8.7	V	
Input Capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V, f=1MHz$	-	600	800	pF	
Reverse Transfer Capacitance	$C_{rss}$		-	40	60	pF	
Output Capacitance	$C_{oss}$		-	150	200	pF	
Switching Time	Rise Time	$t_r$		-	15	30	ns
	Turn-on Time	$t_{on}$		-	30	60	ns
	Fall Time	$t_f$		-	15	30	ns
	Turn-off Time	$t_{off}$		-	40	85	ns
Total Gate Charge (Gate-Source Plus Gate-Drain)	$Q_g$	$V_{GS}=10V, I_D=6A,$	-	22	30	nC	
Gate Source Charge	$Q_{gs}$	$V_{DS}=400V$	-	11	-	nC	
Gate-Drain ("Miller") Charge	$Q_{gd}$		-	11	-	nC	

## SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Source Current	$I_S$	—	-	-	4.5	A
Pulse Source Current	$I_{SP}$	—	-	-	18	A
Diode Forward Voltage	$V_{SD}$	$I_S=4.5A, V_{GS}=0V, T_c=25^\circ C$	-	-	1.6	V
Reverse Recovery Time	$t_{rr}$	$T_j=150^\circ C, I_F=4.5A,$	-	800	-	ns
Reverse Recovered Charge	$Q_{rr}$	$dI_F/dt=100A/\mu s$	-	4.6	-	$\mu C$

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