

9097250 TOSHIBA (DISCRETE/OPTO)

99D 16900 D



SEMICONDUCTOR

TECHNICAL DATA

TOSHIBA FIELD EFFECT TRANSISTOR

YTF840

SILICON N CHANNEL MOS TYPE

(π-MOS II)

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

FEATURES:

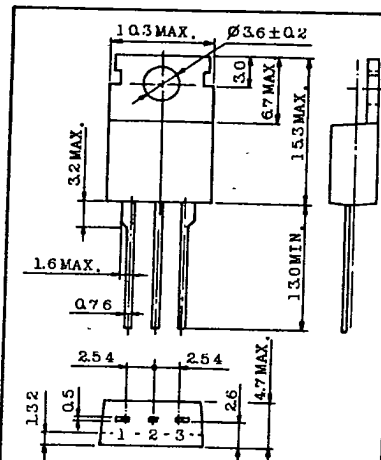
- Low Drain-Source ON Resistance : $R_{DS(ON)}=0.8\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}|=6.5S$ (Typ.)
- Low Leakage Current : $I_{GSS}=\pm 100nA$ (Max.) @ $V_{GS}=\pm 20V$
 $I_{DSS}=250\mu A$ (Max.) @ $V_{DS}=500V$
- Enhancement-Mode : $V_{th}=2.0\sim 4.0V$ @ $V_{DS}=V_{GS}, I_D=250\mu A$

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}	± 20	V
Drain Current	DC($T_c=25^\circ C$)	I_D	8	A
	DC($T_c=100^\circ C$)	I_D	5	
	Pulse	I_{DP}	32	
Inductive Current (Clamped)		I_{LP}	32	A
Drain Power Dissipation ($T_c=25^\circ C$)		P_D	125	W
Channel Temperature		T_{ch}	150	$^\circ C$
Storage Temperature Range		T_{stg}	$-55\sim 150$	$^\circ C$

INDUSTRIAL APPLICATIONS

Unit in mm



1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

JEDEC	TO-220AB
EIAJ	SC-46
TOSHIBA	2-10A3B

Weight : 1.9g

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Junction to Case	$R_{th(j-c)}$	1.0	$^\circ C/W$
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

- 269 -

9097250 TOSHIBA (DISCRETE/OPTO)

99D 16901 DT-39-13



SEMICONDUCTOR

YTF840

TECHNICAL DATA

ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20\text{V}$, $V_{DS}=0\text{V}$	-	-	± 100	nA
Drain Cut-off Current	I_{DSS}	$V_{DS}=500\text{V}$, $V_{GS}=0\text{V}$, $T_c=25^\circ\text{C}$	-	-	250	μA
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	500	-	-	V
Gate Threshold Voltage	V_{th}	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	2.0	-	4.0	V
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS}=10\text{V}$, $I_D=4\text{A}$	4	6.5	-	S
On-State Drain Current	$I_{D(ON)}$	$V_{DS}=10\text{V}$, $V_{GS}=10\text{V}$	8	-	-	A
Drain-Source ON Resistance	$R_{DS(ON)}$	$I_D=4\text{A}$, $V_{GS}=10\text{V}$	-	0.8	0.85	Ω
Drain-Source ON Voltage	$V_{DS(ON)}$	$I_D=8\text{A}$, $V_{GS}=10\text{V}$	-	7.0	8.6	V
Input Capacitance	C_{iss}	$V_{DS}=25\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$	-	1200	1600	pF
Reverse Transfer Capacitance	C_{rss}		-	60	150	pF
Output Capacitance	C_{oss}		-	250	350	pF
Switching Time	Rise Time		-	7	15	ns
	Turn-on Time		-	25	50	ns
	Fall Time		-	15	30	ns
	Turn-off Time		-	60	120	ns
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q_g	$V_{GS}=10\text{V}$, $I_D=10\text{A}$	-	42	60	nC
Gate Source Charge	Q_{gs}	$V_{DS}=400\text{V}$	-	20	-	nC
Gate-Drain ("Miller") Charge	Q_{gd}		-	22	-	nC

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_a=25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Source Current	I_S	—	-	-	8	A
Pulse Source Current	I_{SP}	—	-	-	32	A
Diode Forward Voltage	V_{SD}	$I_S=8\text{A}$, $V_{GS}=0\text{V}$, $T_c=25^\circ\text{C}$	-	-	2.0	V
Reverse Recovery Time	t_{rr}	$T_j=150^\circ\text{C}$, $I_F=8\text{A}$,	-	1100	-	ns
Reverse Recovered Charge	Q_{rr}	$dI_F/dt=100\text{A}/\mu\text{s}$	-	6.4	-	μC

TOSHIBA CORPORATION

GT1A2

- 270 -