

9097250 TOSHIBA (DISCRETE/OPTO)

99D 16838 D T-39-11



SEMICONDUCTOR

TECHNICAL DATA

TOSHIBA FIELD EFFECT TRANSISTOR

YTF531

SILICON N CHANNEL MOS TYPE

(π-MOS II)

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS.

CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS.

FEATURES:

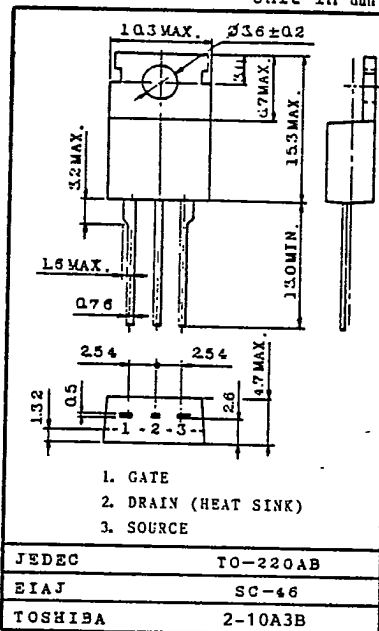
- Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.14\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 5.5S$ (Typ.)
- Low Leakage Current : $I_{GSS} = \pm 500nA$ (Max.) @ $V_{GS} = \pm 20V$
 $I_{DSS} = 250\mu A$ (Max.) @ $V_{DS} = 60V$
- Enhancement-Mode : $V_{th} = 2.0 \sim 4.0V$ @ $V_{DS} = V_{GS}, I_D = 250\mu A$

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

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSX}	60	V
Drain-Gate Voltage ($R_{GS} = 1M\Omega$)		V_{DGR}	60	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	DC ($T_c = 25^\circ C$)	I_D	14	A
	DC ($T_c = 100^\circ C$)	I_D	9	
	Pulse	I_{DP}	56	
Inductive Current (Clamped)		I_{LP}	56	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

- 207 -

9097250 TOSHIBA (DISCRETE/OPTO)

99D 16839 DT-39-11



SEMICONDUCTOR

TECHNICAL DATA

Y T F 5 3 1

ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 500	nA
Drain Cut-off Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V, T_c=25^\circ C$	-	-	250	μA
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=250\mu A, V_{GS}=0V$	60	-	-	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} $	$V_{DS}=10V, I_D=8A$	4.0	5.5	-	S
On-State Drain Current	$I_D(ON)$	$V_{DS}=10V, V_{GS}=10V$	14	-	-	A
Drain-Source ON Resistance	$R_{DS(ON)}$	$I_D=8A, V_{GS}=10V$	-	0.14	0.18	Ω
Drain-Source ON Voltage	$V_{DS(ON)}$	$I_D=14A, V_{GS}=10V$	-	2.2	3.3	V
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1MHz$	-	600	800	pF
Reverse Transfer Capacitance	C_{rss}		-	120	150	pF
Output Capacitance	C_{oss}		-	390	500	pF
Switching Time	Rise Time		-	35	75	ns
	Turn-on Time		-	50	105	ns
	Fall Time		-	20	45	ns
	Turn-off Time		-	40	85	ns
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q_g	$V_{GS}=10V, I_D=18A.$	-	18	30	nC
Gate Source Charge	Q_{gs}	$V_{DS}=48V$	-	9	-	nC
Gate-Drain ("Miller") Charge	Q_{gd}		-	9	-	nC

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Source Current	I_S	—	-	-	14	A
Pulse Source Current	I_{SP}	—	-	-	56	A
Diode Forward Voltage	V_{SD}	$I_S=14A, V_{GS}=0V, T_c=25^\circ C$	-	-	2.5	V
Reverse Recovery Time	t_{rr}	$T_j=150^\circ C, I_F=14A,$	-	360	-	ns
Reverse Recovered Charge	Q_{rr}	$dI_F/dt=100A/\mu s$	-	2.1	-	μC

TOSHIBA CORPORATION

GT1A2

- 208 -