

9097250 TOSHIBA (DISCRETE/OPTO)

99D 16790 D T-39-11



SEMICONDUCTOR

TECHNICAL DATA

TOSHIBA FIELD EFFECT TRANSISTOR

YTF231

SILICON N CHANNEL MOS TYPE

(N-MOS II)

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS.

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

FEATURES:

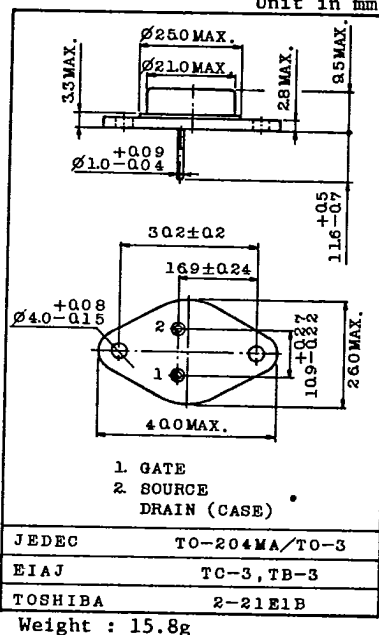
- Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.25\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 4.8S$ (Typ.)
- Low Leakage Current : $I_{GSS} = \pm 100nA$ (Max.) @ $V_{GS} = \pm 20V$
 $I_{DSS} = 250\mu A$ (Max.) @ $V_{DS} = 150V$
- Enhancement-Mode : $V_{th} = 2.0 \sim 4.0V$ @ $V_{DS} = V_{GS}$, $I_D = 250\mu A$

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DS}	150	V
Drain-Gate Voltage ($R_{GS} = 1M\Omega$)	V_{DGR}	150	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current	DC ($T_c = 25^\circ C$)	I_D	9
	DC ($T_c = 100^\circ C$)	I_D	6
	Pulse	I_{DP}	36
Inductive Current (Clamped)	I_{LP}	36	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



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	$R_{th(j-a)}$	30	$^\circ C/W$
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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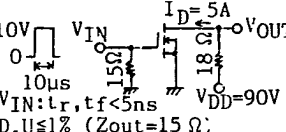


SEMICONDUCTOR

Y T F 2 3 1

TECHNICAL DATA

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

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Drain Cut-off Current		I_{DSS}	$V_{DS}=150V, V_{GS}=0V, T_c=25^{\circ}C$	-	-	250	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D=250\mu A, V_{GS}=0V$	150	-	-	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} $	$V_{DS}=10V, I_D=5A$	3.0	4.8	-	S
On-State Drain Current		$I_{D(ON)}$	$V_{DS}=10V, V_{GS}=10V$	9	-	-	A
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D= 5A \ , \ V_{GS}=10V$	-	0.25	0.40	Ω
Drain-Source ON Voltage		$V_{DS(ON)}$	$I_D= 9A \ , \ V_{GS}=10V$	-	2.5	3.8	V
Input Capacitance		C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1MHz$	-	620	800	pF
Reverse Transfer Capacitance		C_{rss}		-	100	150	pF
Output Capacitance		C_{oss}		-	350	450	pF
Switching Time	Rise Time	t_r		-	25	50	ns
	Turn-on Time	t_{on}		-	40	80	ns
	Fall Time	t_f		-	20	40	ns
	Turn-off Time	t_{off}		-	45	90	ns
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{GS}=10V, I_D=12A \ .$	-	19	30	nC
Gate Source Charge		Q_{gs}	$V_{DS}=120V$	-	10	-	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	—	—	—	9	A
Pulse Source Current	I_{SP}	—	—	—	36	A
Diode Forward Voltage	V_{SD}	$I_S=9A$, $V_{GS}=0V$, $T_c=25^{\circ}C$	—	—	2.0	V
Reverse Recovery Time	t_{rr}	$T_j=150^{\circ}C$, $I_F=9A$,	—	450	—	ns
Reverse Recovered Charge	Q_{rr}	$dI_F/dt=100A/\mu s$	—	3.0	—	μC

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