Toshiba SEMICONDUCTOR

TECHNICAL DATA

TOSHIBA FIELD EFFECT TRANSISTOR

Y T F 8 3 1

SILICON N CHANNEL MOS TYPE

(π-MOS II)

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS.

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

INDUSTRIAL APPLICATIONS

FEATURES:

. Low Drain-Source ON Resistance : $R_{DS(ON)}$=1.3Ω (Typ.)

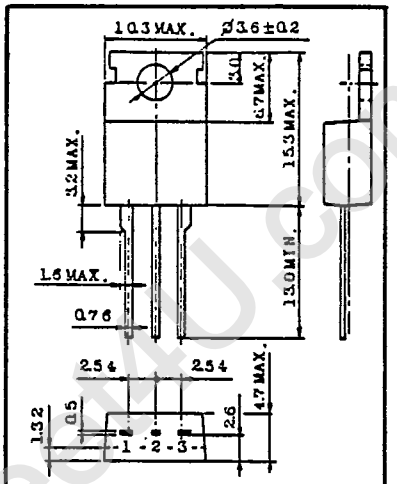
. High Forward Transfer Admittance : |Yfs|=3.25S (Typ.)

. Low Leakage Current : I_{GSS}=±500nA(Max.) @ V_{GS}=±20V

I_{DSS}= 250uA(Max.) @ V_{DS}=450V

. Enhancement-Mode : V_{th}=2.0~4.0V @ V_{DS}=V_{GS}, I_D=250μA

Unit in mm



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

Weight : 1.9g

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSX}	450	V
Drain-Gate Voltage (R_{GS}=1MΩ)		V_{DGR}	450	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	DC(Tc=25°C)	I_D	4.5	A
	DC(Tc=100°C)	I_D	3	
	Pulse	I_{DP}	18	
Inductive Current (Clamped)		I_{LP}	18	A
Drain Power Dissipation (Tc=25°C)		P_D	75	W
Channel Temperature		T_{ch}	150	°C
Storage Temperature Range		T_{stg}	-55~150	°C

THERMAL CHARACTERISTICS

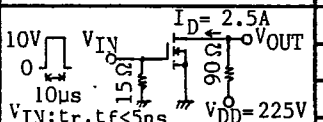
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Junction to Case	$R_{th(j-c)}$	1.67	°C/W
Thermal Resistance, Junction to Ambient	$R_{th(j-a)}$	80	°C/W
Muximum Lead Temperature for Soldering Purposes (1.6mm from case for 10 seconds)	T_L	300	°C

SEMICONDUCTOR

TECHNICAL DATA

YTF831

ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±500	nA
Drain Cut-off Current		I_{DSS}	V_{DS}=450V, V_{GS}=0V, Tc=25°C	-	-	250	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	I_D=250μA, V_{GS}=0V	450	-	-	V
Gate Threshold Voltage		V_{th}	V_{DS}=V_{GS}, I_D=250μA	2.0	-	4.0	V
Forward Transfer Admittance		$\|Yfs\|$	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	Ω
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, V_{DS}=360V	-	22	30	nC
Gate Source Charge		Q_{gs}		-	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, Tc=25°C	-	-	1.6	V
Reverse Recovery Time	t_{rr}	Tj=150°C, I_F=4.5A, dI$_F$/dt=100A/μs	-	800	-	ns
Reverse Recovered Charge	Q_{rr}		-	4.6	-	μC