

YTF531

FIELD EFFECT TRANSISTOR

SILICON N CHANNEL MOS TYPE (π -MOSII)

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 : $I_{DSS} = 250 \mu A$ (Max.) @ $V_{DS} = 60V$
- Enhancement-Mode : $V_{th} = 2.0 \sim 4.0V$ @ $V_{DS} = 10V$, $I_D = 250 \mu A$

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

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	60	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)		V_{DGR}	60	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	DC	I_D	14	A
	Pulse	I_{DP}	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}	$-55 \sim 150$	$^\circ C$

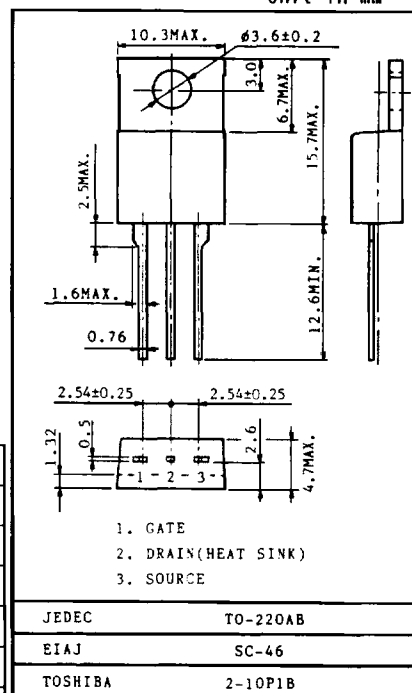
THERMAL CHARACTERISTICS

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

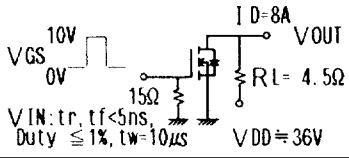
THIS TRANSISTOR IS AN ELECTROSTATIC SENSITIVE DEVICE. PLEASE HANDLE WITH CAUTION.

INDUSTRIAL APPLICATIONS

Unit in mm



ELECTRICAL CHARACTERISTICS (Ta=25 °C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I _{GSS}	V _{GS} = ±20V, V _{DS} =0V	—	—	±100	nA
Drain Cut-off Current		I _{DSS}	V _{DS} =60V, V _{GS} =0V	—	—	250	μA
Drain-Source Breakdown Voltage		V(BR) _{DSS}	I _D = 250 μA, V _{GS} =0V	60	—	—	V
Gate Threshold Voltage		V _{th}	V _{DS} =10V, I _D = 250 μA	2.0	—	4.0	V
Drain-Source ON Resistance		R _{DS(ON)}	I _D =8A, V _{GS} =10V	—	0.14	0.18	Ω
Forward Transfer Admittance		Y _{fs}	V _{DS} =10V, I _D =8A	4.0	5.5	—	S
Input Capacitance		C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz	—	600	800	pF
Reverse Transfer Capacitance		C _{rss}		—	120	150	
Output Capacitance		C _{oss}		—	390	500	
Switching Time	Rise Time	t _r		—	35	75	ns
	Turn-on Time	t _{on}		—	50	105	
	Fall Time	t _f		—	20	45	
	Turn-off Time	t _{off}		—	40	85	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q _g	V _{DD} ≅ 48V, V _{GS} =10V, I _D =18A	—	18	30	nC
Gate-Source Charge		Q _{gs}		—	9	—	
Gate-Drain(" Miller")Charge		Q _{gd}		—	9	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I _{DR}	----	—	—	14	A
Pulse Drain Reverse Current	I _{DRP}	----	—	—	56	A
Diode Forward Voltage	V _{DSF}	I _{DR} =14A, V _{GS} =0V	—	—	-2.5	V
Reverse Recovery Time	t _{rr}	I _{DR} =14A, V _{GS} =0V	—	180	—	ns
Reverse Recovered Charge	Q _{rr}	d I _{DR} /dt= 100A/μs	—	0.9	—	μC