

9097250 TOSHIBA (DISCRETE/OPTO)

99D 16737 D

T-39-13



## SEMICONDUCTOR

TECHNICAL DATA  
TENTATIVE

TOSHIBA FIELD EFFECT TRANSISTOR

2 S K 6 7 4

SILICON N CHANNEL MOS TYPE  
( $\pi$ -MOS)

INDUSTRIAL APPLICATIONS

Unit in mm

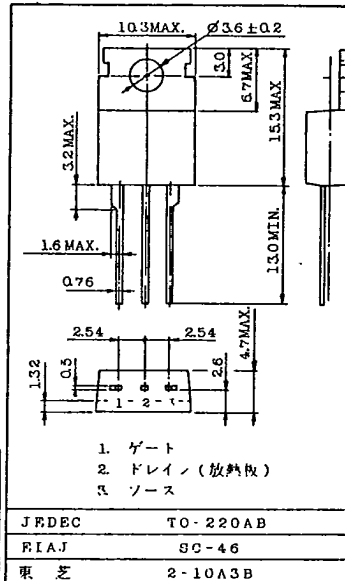
HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS.  
CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR  
DRIVE APPLICATIONS.

## FEATURES:

- Low Drain-Source ON Resistance :  $R_{DS(ON)}=0.040\Omega$ (Typ.)
- High Forward Transfer Admittance :  $|Y_{fs}|=11S$  (Typ.)
- Low Leakage Current :  $I_{GSS}=\pm 100nA$ (Max.) @  $V_{GS}=\pm 20V$   
 $I_{DSS}=300\mu A$ (Max.) @  $V_{DS}=60V$
- Enhancement-Mode :  $V_{th}=1.5\sim 3.5V$  @  $V_{DS}=10V, I_D=1mA$

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	$V_{DSX}$	60	V
Drain-Gate Voltage	$V_{DGR}$	60	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current	DC( $T_c=25^\circ C$ )	$I_D$	A
	Pulse	$I_{DP}$	
Drain Power Dissipation ( $T_c=25^\circ C$ )	$P_D$	100	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, Junction to Case	$R_{th(j-c)}$	1.25	$^\circ C/W$
Thermal Resistance, Junction to Ambient	$R_{th(j-a)}$	83.3	$^\circ C/W$
Maximum Lead Temperature for Soldering Purposes (1.6mm from case for 10 seconds)	$T_L$	300	$^\circ C$

TOSHIBA CORPORATION

GT1ASA

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## ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Gate Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA	
Drain Cut-off Current	$I_{DSS}$	$V_{DS}=60V, V_{GS}=0V$	-	-	300	$\mu A$	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=10mA, V_{GS}=0V$	60	-	-	V	
Gate Threshold Voltage	$V_{th}$	$V_{DS}=10V, I_D=1mA$	1.5	-	3.5	V	
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS}=10V, I_D=15A$	8.0	11	-	S	
Drain-Source ON Resistance	$R_{DS(ON)}$	$I_D=15A, V_{GS}=10V$	-	0.040	0.060	$\Omega$	
Drain-Source ON Voltage	$V_{DS(ON)}$	$I_D=25A, V_{GS}=10V$	-	1.1	1.65	V	
Input Capacitance	$C_{iss}$	$V_{DS}=10V, V_{GS}=0V, f=1MHz$	-	1200	1600	pF	
Reverse Transfer Capacitance	$C_{rss}$		-	320	450		
Output Capacitance	$C_{oss}$		-	1200	1600		
Switching Time	Rise Time	$t_r$		-	80	160	ns
	Turn-on Time	$t_{on}$		-	100	200	
	Fall Time	$t_f$		-	85	170	
	Turn-off Time	$t_{off}$		-	165	330	
Total Gate Charge (Gate-Source Plus Gate-Drain)	$Q_g$	$I_D=25A, V_{GS}=10V$ $V_{DD}=48V$	-	38	60	nC	
Gate-Source Charge	$Q_{gs}$		-	20	-		
Gate-Drain ("Miller") Charge	$Q_{gd}$		-	18	-		

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	$I_{DR}$	--	-	-	25	A
Pulse Drain Reverse Current	$I_{DRP}$	--	-	-	100	A
Diode Forward Voltage	$V_{DSF}$	$I_{DR}=25A, V_{GS}=0V$	-	-	1.7	V
Reverse Recovery Time	$t_{rr}$	$I_{DR}=25A$	-	160	-	ns
Reverse Recovered Charge	$Q_{rr}$	$dI_{DR}/dt=100A/\mu s$	-	0.6	-	$\mu C$

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