T-39-13

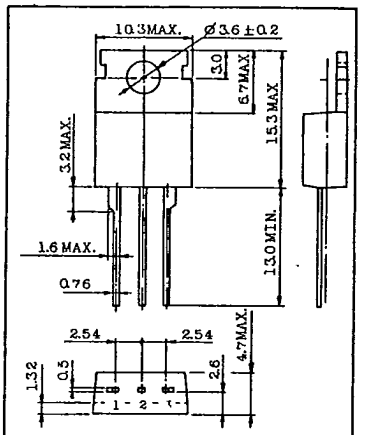
SEMICONDUCTOR
TECHNICAL DATA
TENTATIVE

TOSHIBA FIELD EFFECT TRANSISTOR
2SK674
SILICON N CHANNEL MOS TYPE (π-MOSⅡ)

INDUSTRIAL APPLICATIONS

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

Unit in mm



JEDEC	TO-220AB
EIAJ	SC-46
東芝	2-10A3B

FEATURES:

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

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSX}	60	V
Drain-Gate Voltage		V_{DGR}	60	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	DC(Tc=25°C)	I_D	25	A
	Pulse	I_{DP}	100	
Drain Power Dissipation (Tc=25°C)		P_D	100	W
Channel Temperature		Tch	150	°C
Storage Temperature Range		T_{stg}	-55~150	°C

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Junction to Case	$R_{th(j-c)}$	1.25	°C/W
Thermal Resistance, Junction to Ambient	$R_{th(j-a)}$	83.3	°C/W
Muximum Lead Temperature for Soldering Purposes (1.6mm from case for 10 seconds)	T_L	300	°C

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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	–	–	300	μA
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	Ω
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	10V, 0, 10μs, V_{IN}, 50Ω, I_D= 15A, 2Ω, V_{OUT}, V_{IN}:t_r,t_f<5ns, Duty≤1%, V_{DD}≒30V	–	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 Pius 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, dI_{DR}/dt=100A/μs	–	160	–	ns
Reverse Recovered Charge	Q_{rr}		–	0.6	–	μC