TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE (π-MOSII .5)

2SK1858

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS.

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

INDUSTRIAL APPLICATIONS

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 4.3\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 1.7S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 100\mu A$ (Max.) ($V_{DS} = 640V$)
- Enhancement-Mode : $V_{th} = 1.5 \sim 3.5V$ ($V_{DS} = 10V$, $I_D = 1mA$)

MAXIMUM RATINGS (Ta = 25°C)

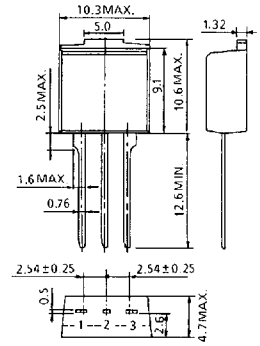
CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	800	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)		V_{DGR}	800	V
Gate-Source Voltage		V_{GSS}	±30	V
Drain Current	DC	I_D	3	A
	Pulse	I_{DP}	9	
Drain Power Dissipation (Tc = 25°C)		P_D	60	W
Channel Temperature		T_{ch}	150	°C
Storage Temperature Range		T_{stg}	−55~150	°C

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	2.08	°C / W
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	83.3	°C / W

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

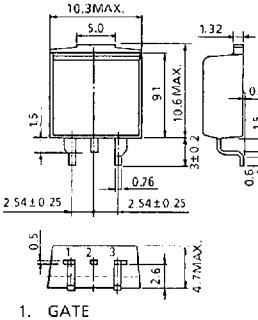
TO-220FL Unit in mm



1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

JEDEC	—
EIAJ	—
TOSHIBA	2-10S1B

TO-220SM



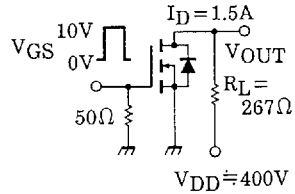
1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

JEDEC	—
EIAJ	—
TOSHIBA	2-10S2B

Weight : 1.5g

961001EAA2

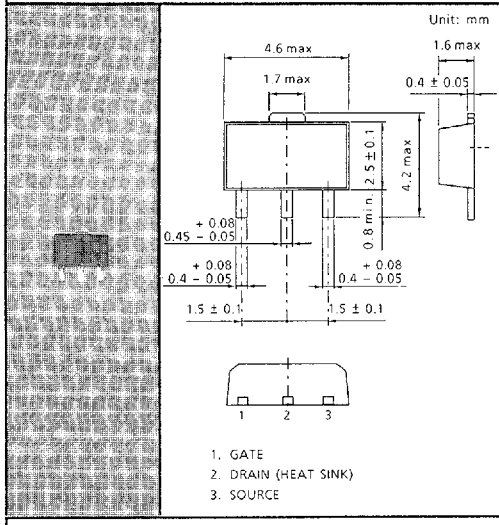
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS}=\pm25V$, $V_{DS}=0V$	—	—	±100	nA
Drain Cut-off Current		I_{DSS}	$V_{DS}=640V$, $V_{GS}=0V$	—	—	100	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D=10mA$, $V_{GS}=0V$	800	—	—	V
Gate Threshold Voltage		V_{th}	$V_{DS}=10V$, $I_D=1mA$	1.5	—	3.5	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D=1.5A$, $V_{GS}=10V$	—	4.3	5.0	Ω
Forward Transfer Admittance		$\|Y_{fs}\|$	$V_{DS}=20V$, $I_D=1.5A$	1.0	1.7	—	S
Input Capacitance		C_{iss}	$V_{DS}=25V$, $V_{GS}=0V$, f=1MHz	—	360	—	pF
Reverse Transfer Capacitance		C_{rss}		—	30	—	
Output Capacitance		C_{oss}		—	60	—	
Switching Time	Rise Time	t_r	 V_{IN} : t_r, $t_f<5ns$, Duty ≦ 1%, $t_w=10\mu s$	—	25	—	ns
	Turn-on Time	t_{on}		—	40	—	
	Fall Time	t_f		—	40	—	
	Turn-off Time	t_{off}		—	150	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD}\fallingdotseq400V$, $V_{GS}=10V$, $I_D=3A$	—	26	—	nC
Gate-Source Charge		Q_{gs}		—	16	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	10	—	

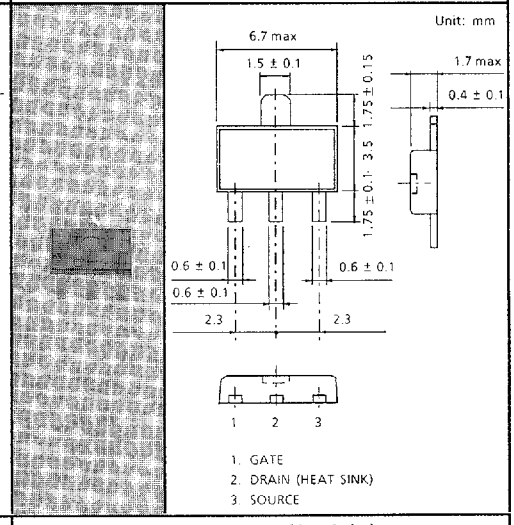
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	—	—	—	3	A
Pulse Drain Reverse Current	I_{DRP}	—	—	—	9	A
Diode Forward Voltage	V_{DSF}	$I_{DR}=3A$, $V_{GS}=0V$	—	—	−2.0	V
Reverse Recovery Time	t_{rr}	$I_{DR}=3A$, $V_{GS}=0V$, $dI_{DR}/dt=100A/\mu s$	—	600	—	ns
Reverse Recovered Charge	Q_{rr}		—	12	—	μC

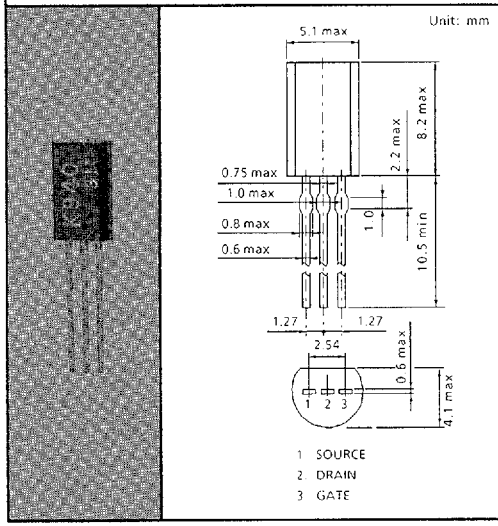
POWER-MINI (SOT-89)



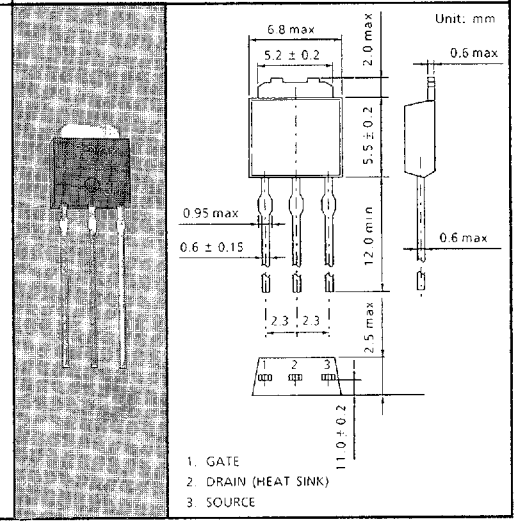
SP (SOT-223)



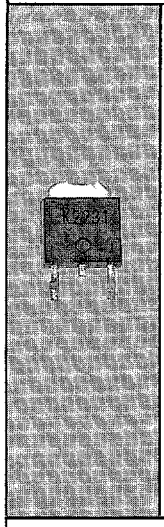
TO92-MOD

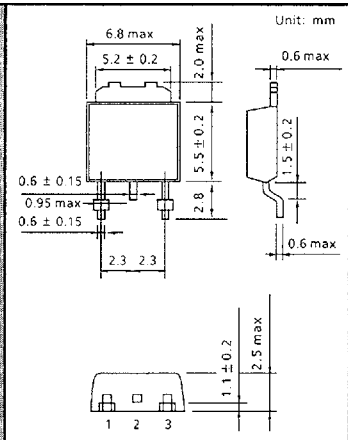


POWER-MOLD (Straight)



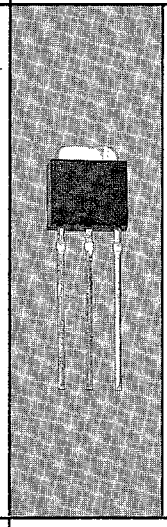
POWER-MOLD (Lead Formed)

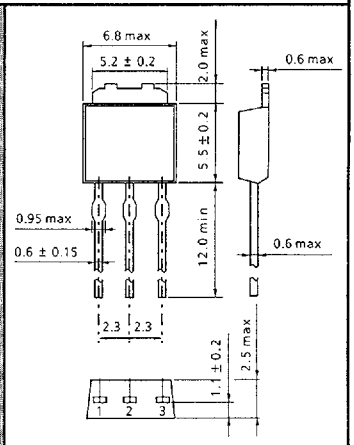




1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

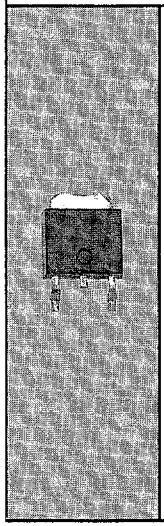
DP (Straight)

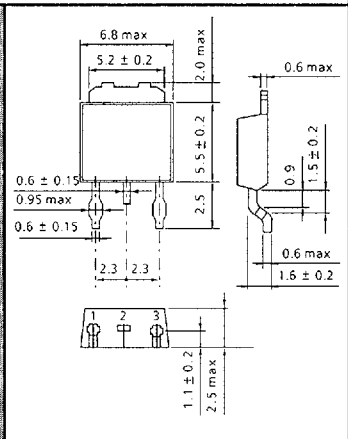




1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

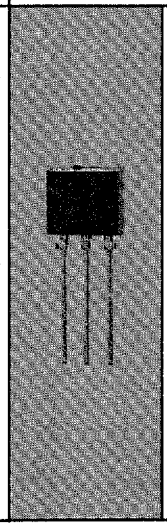
DP (Lead Forming)

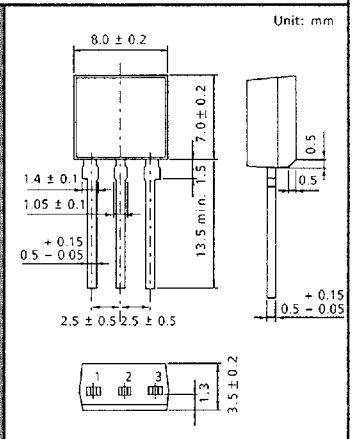




1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

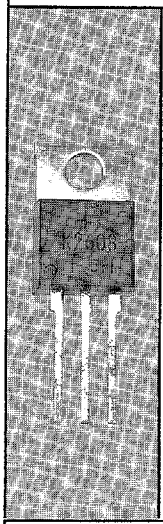
TPS



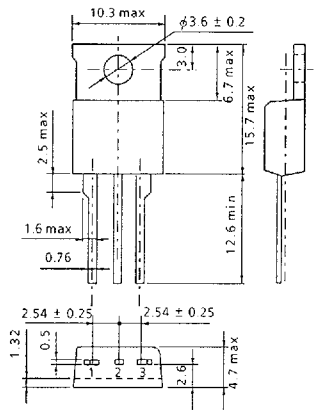


1. SOURCE
2. DRAIN
3. GATE

TO-220AB

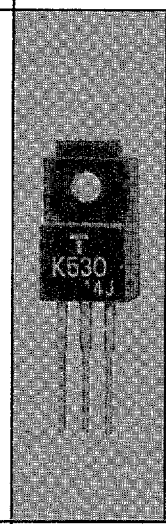


Unit: mm



1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

TO-220 (IS)



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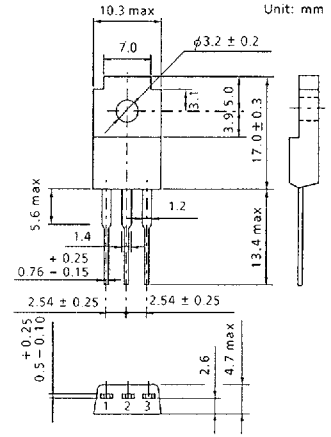
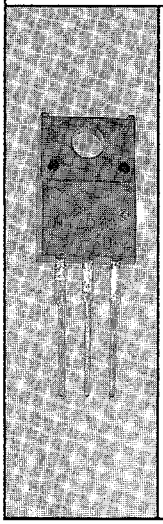
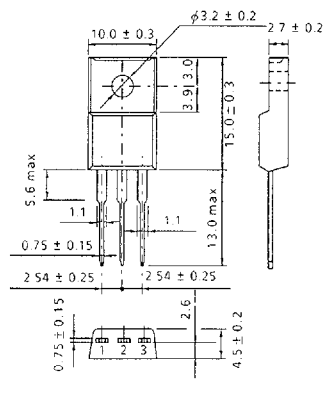


1. GATE
2. DRAIN
3. SOURCE

TO-220 (NIS)

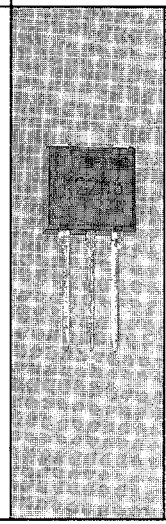


Unit: mm

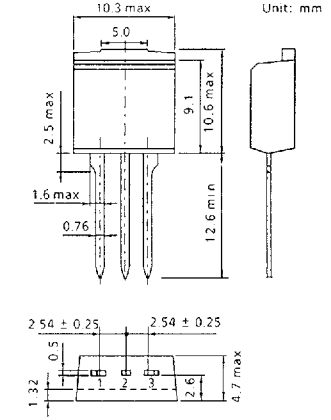


1. GATE
2. DRAIN
3. SOURCE

TO-220FL

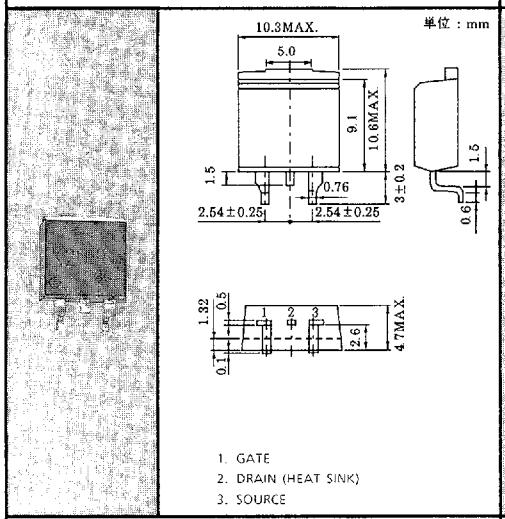


Unit: mm



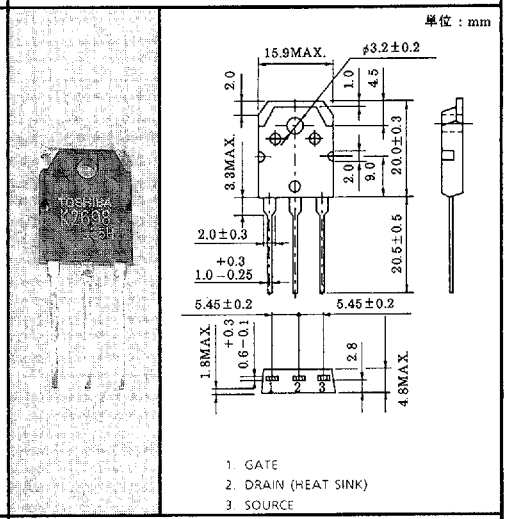
1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

TO-220SM



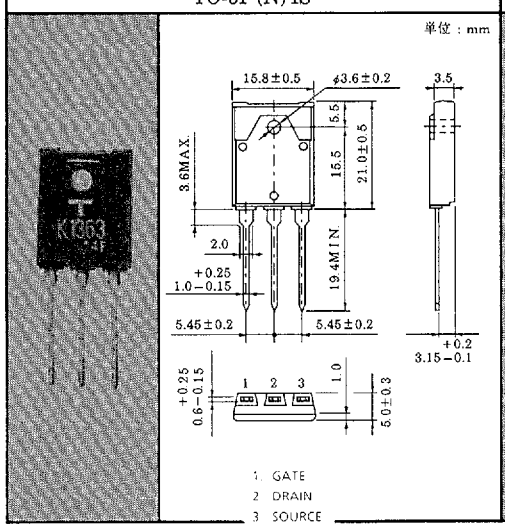
1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

TO-3P (N)



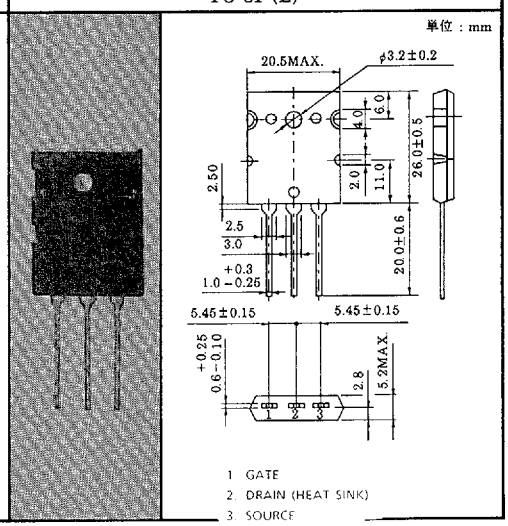
1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

TO-3P (N) IS



1. GATE
2. DRAIN
3. SOURCE

TO-3P (L)



1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE