2SK1746

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

- Low Drain-Source ON Resistance : $R_{DS\,(ON)} = 3.0\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 1.5S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 300\mu A$ (Max.) @$V_{DS} = 600V$
- Enhancement-Mode : $V_{th} = 2.0 \sim 4.0V$ @$V_{DS} = 10V$, $I_D = 1mA$

MAXIMUM RATINGS (Ta = 25°C)

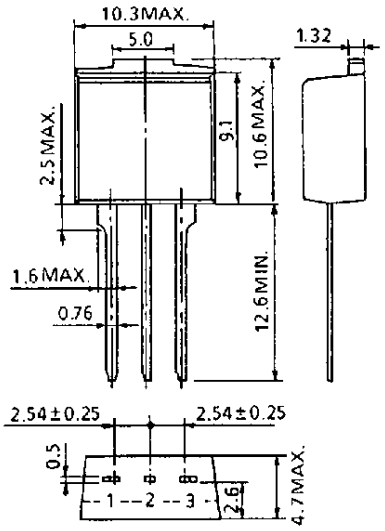
CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	600	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)		V_{DGR}	600	V
Gate-Source Voltage		V_{GSS}	±30	V
Drain Current	DC	I_D	2	A
	Pulse	I_{DP}	8	
Drain Power Dissipation (Tc = 25°C)		P_D	40	W
Channel Temperature		T_{ch}	150	°C
Storage Temperature Range		T_{stg}	−55~150	°C

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th\,(ch-c)}$	3.12	°C / W
Thermal Resistance, Channel to Ambient	$R_{th\,(ch-a)}$	83.3	°C / W

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

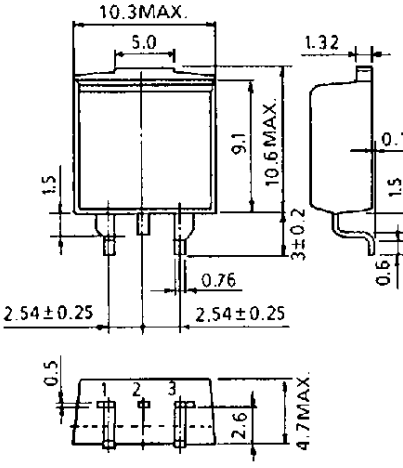
TO-220FL Unit in mm



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

JEDEC	—
EIAJ	—
TOSHIBA	2-10S1B

TO-220SM Unit in mm



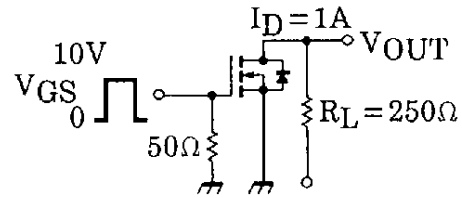
1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

JEDEC	—
EIAJ	—
TOSHIBA	2-10S2B

Weight : 1.5g

961001EAA2

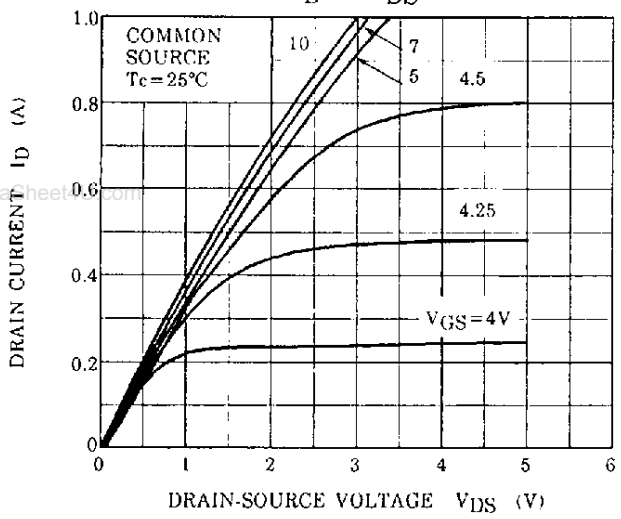
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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}	$V_{DS}=600V$, $V_{GS}=0V$	—	—	300	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D=10mA$, $V_{GS}=0V$	600	—	—	V
Gate Threshold Voltage		V_{th}	$V_{DS}=10V$, $I_D=1mA$	2.0	—	4.0	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D=1A$, $V_{GS}=10V$	—	3.0	4.0	Ω
Forward Transfer Admittance		$\|Y_{fs}\|$	$V_{DS}=10V$, $I_D=1A$	1.0	1.5	—	S
Inpur Capacitance		C_{iss}	$V_{DS}=10V$, $V_{GS}=0V$, f=1MHz	—	410	—	pF
Reverse Transfer Capacitance		C_{rss}		—	80	—	
Output Capacitance		C_{oss}		—	180	—	
Switching Time	Rise Time	t_r	 V_{IN} : t_r, $t_f<5ns$, $V_{DD}\fallingdotseq250V$ Duty≦1%, $t_w=10\mu s$	—	12	—	ns
	Turn-on Time	t_{on}		—	23	—	
	Fall Time	t_f		—	20	—	
	Turn-off Time	t_{off}		—	80	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD}\fallingdotseq480V$, $V_{GS}=10V$, $I_D=2A$	—	12	—	nC
Gate-Source Charge		Q_{gs}		—	6	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	6	—	

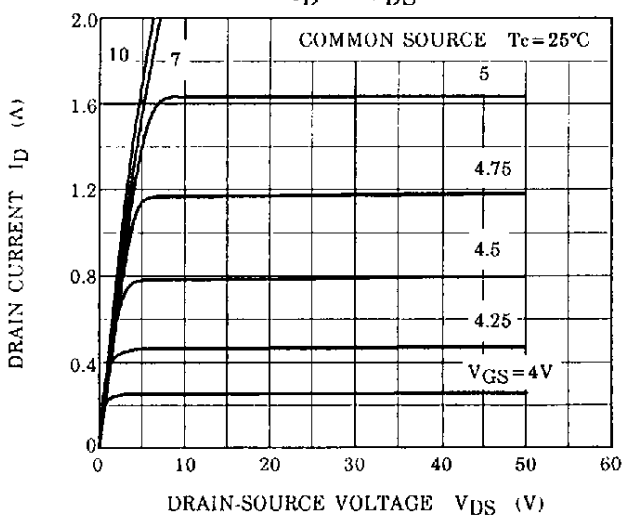
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	—	—	—	2	A
Pulse Drain Reverse Current	I_{DRP}	—	—	—	8	A
Diode Forward Voltage	V_{DSF}	$I_{DR}=2A$, $V_{GS}=0V$	—	—	−1.6	V
Reverse Recovery Time	t_{rr}	$I_{DR}=2A$, $V_{GS}=0V$ $dI_{DR}/dt=100A/\mu s$	—	550	—	ns
Reverse Recovered Charge	Q_{rr}		—	1.1	—	μC

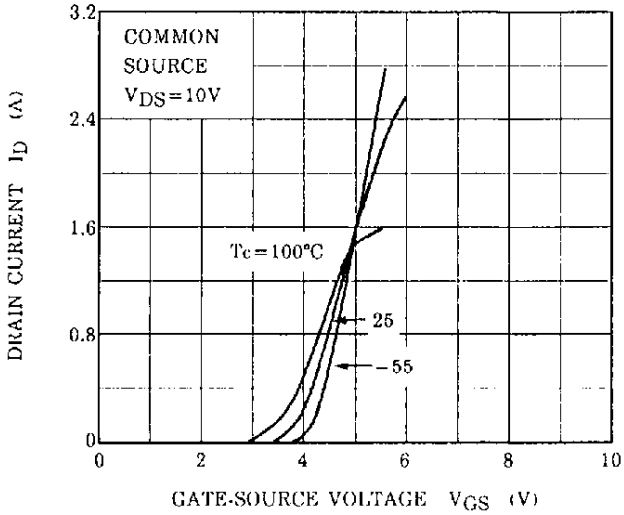
$I_D - V_{DS}$



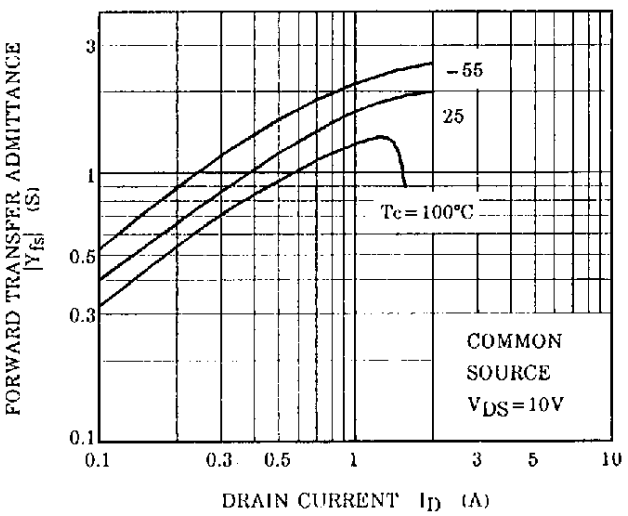
$I_D - V_{DS}$



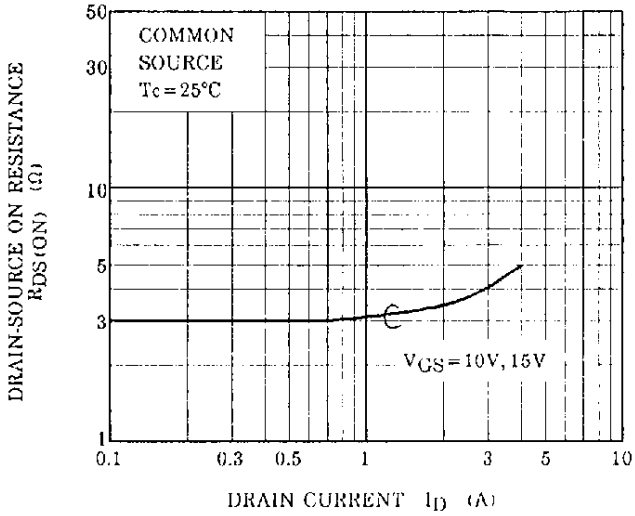
$I_D - V_{GS}$



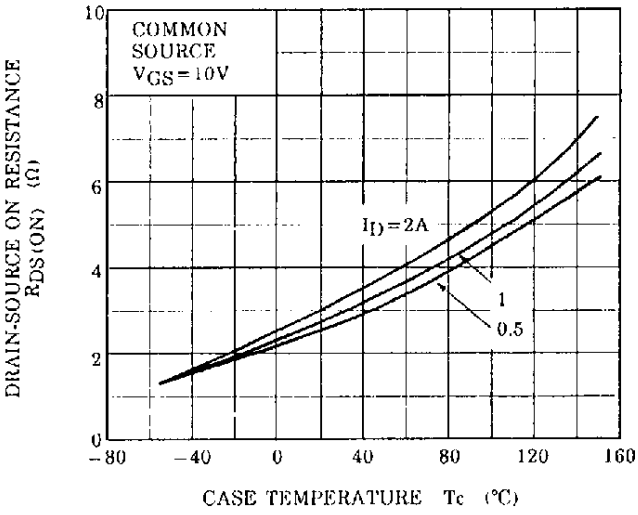
$|Y_{fs}| - I_D$



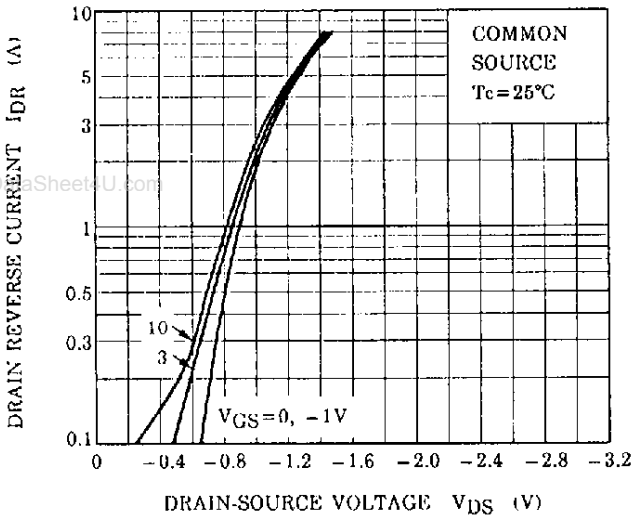
$R_{DS(ON)} - I_D$



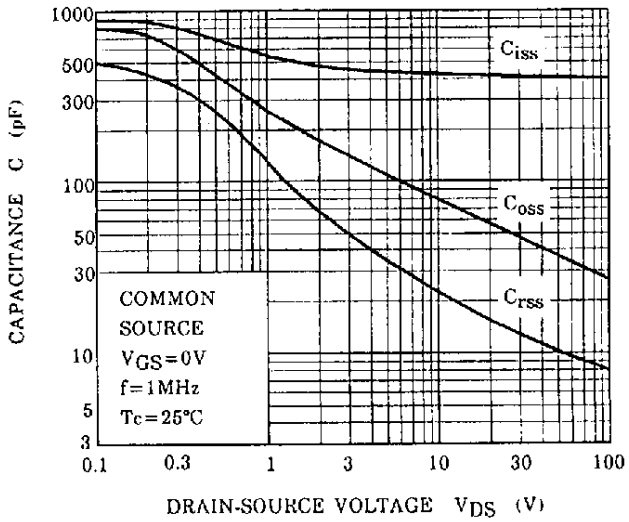
$R_{DS(ON)} - T_c$



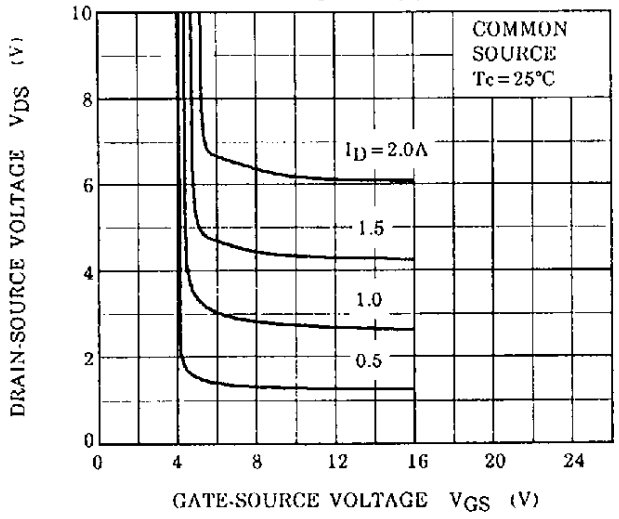
I_{DR} – V_{DS}



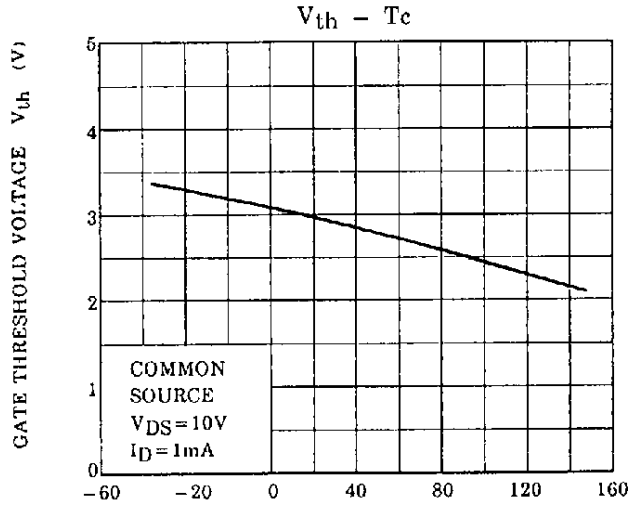
CAPACITANCE – V_{DS}



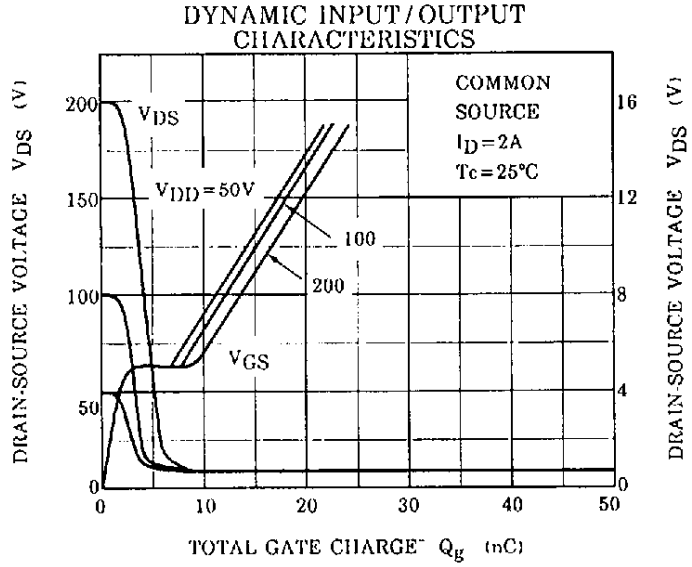
V_{DS} – V_{GS}



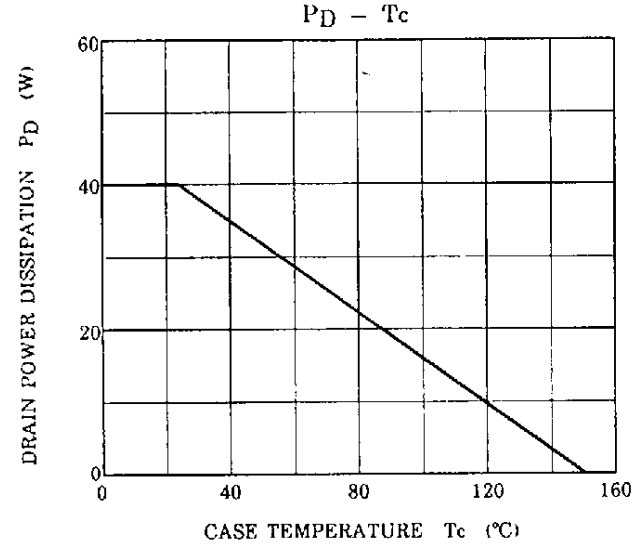
V_{th} – Tc

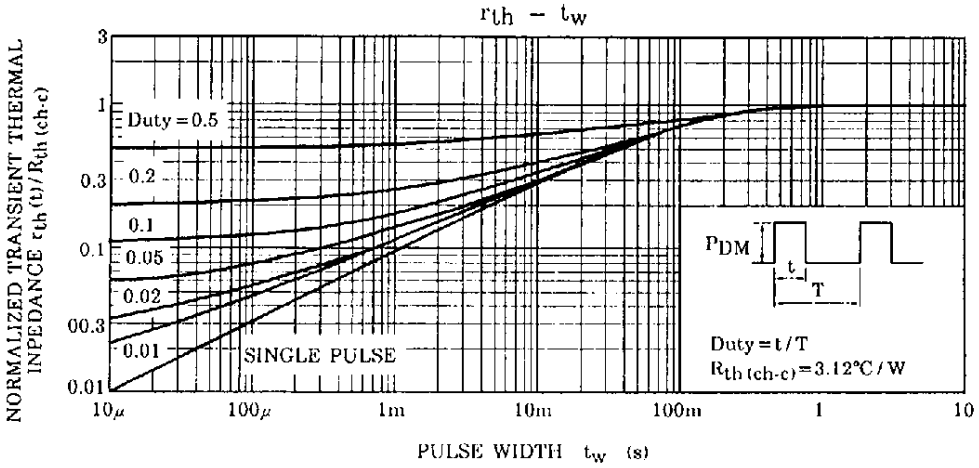


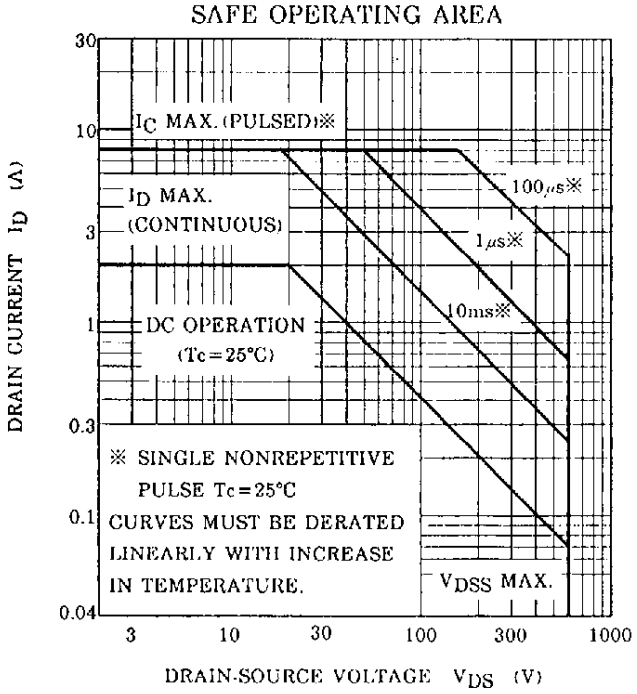
DYNAMIC INPUT/OUTPUT CHARACTERISTICS



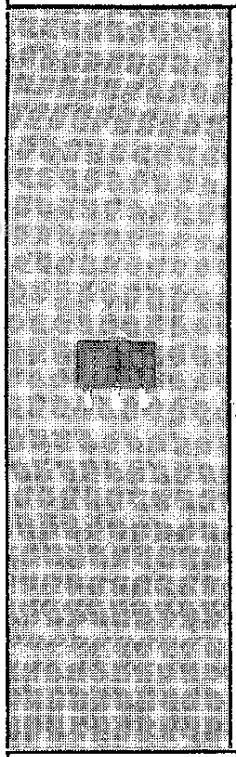
P_D – Tc



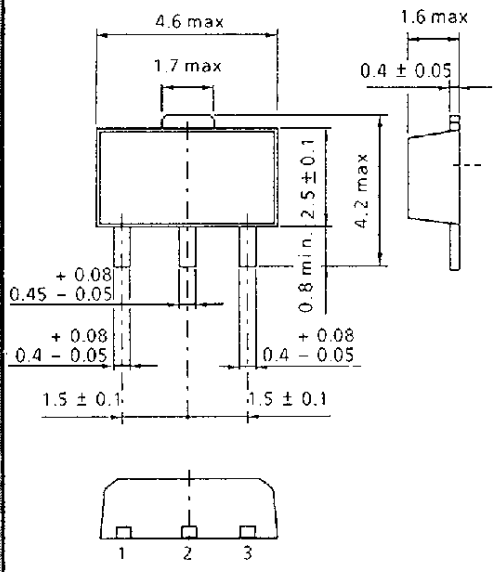




POWER-MINI (SOT-89)

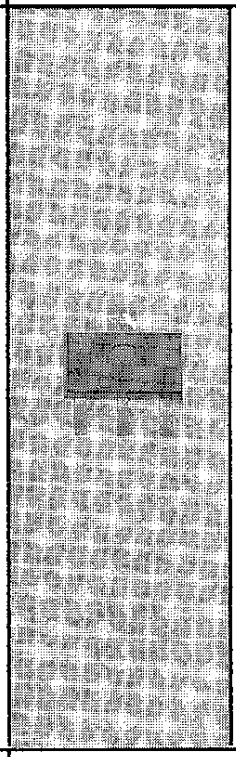


Unit: mm



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

SP (SOT-223)



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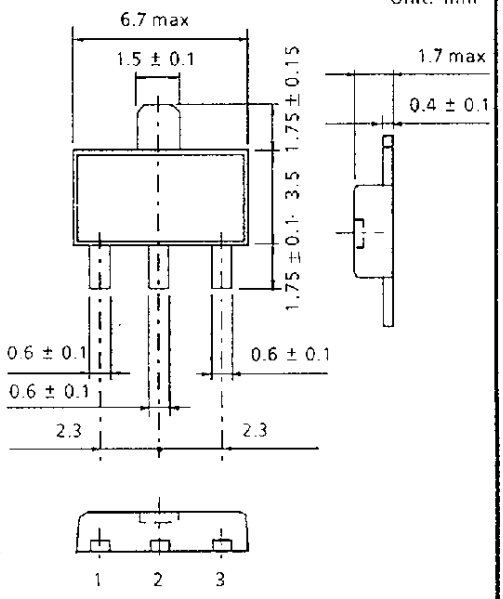
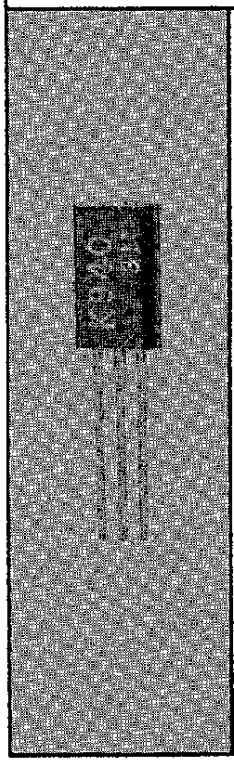


1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

TO92-MOD



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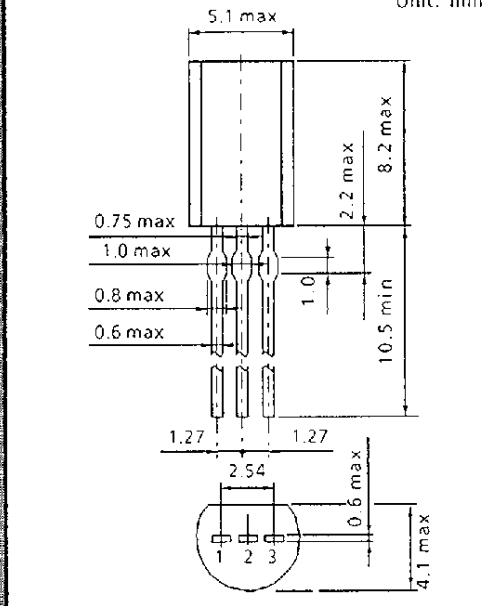
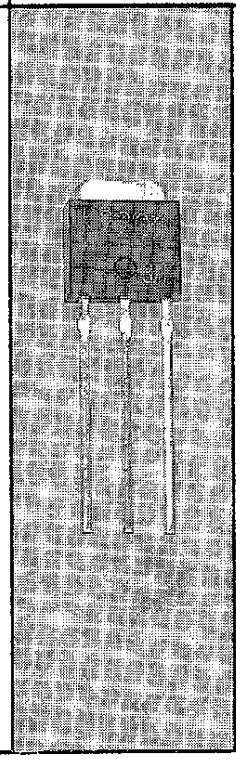


1. SOURCE
2. DRAIN
3. GATE

POWER-MOLD (Straight)



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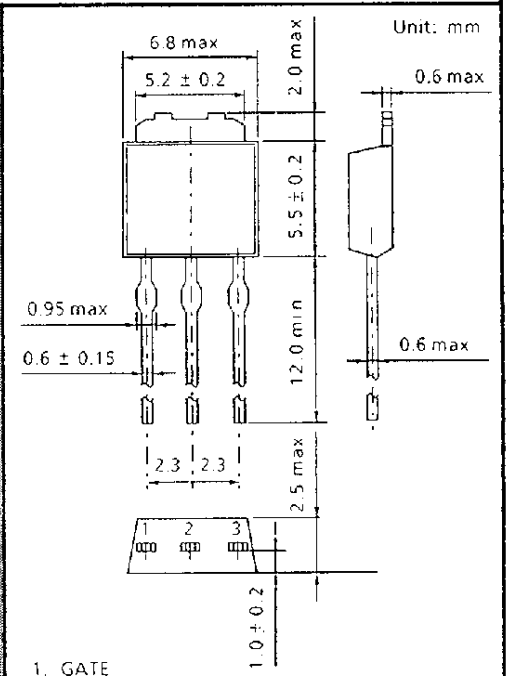
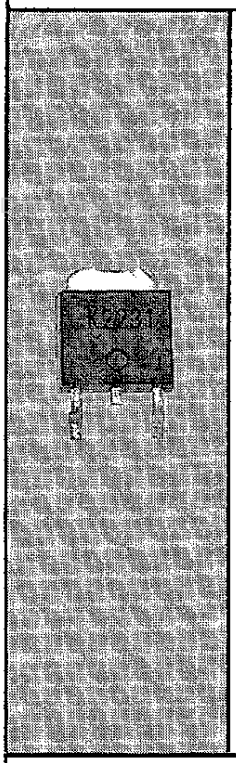
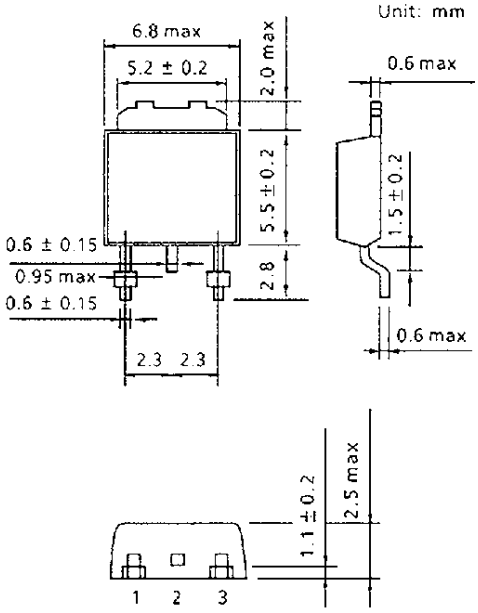


1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

POWER-MOLD (Lead Formed)

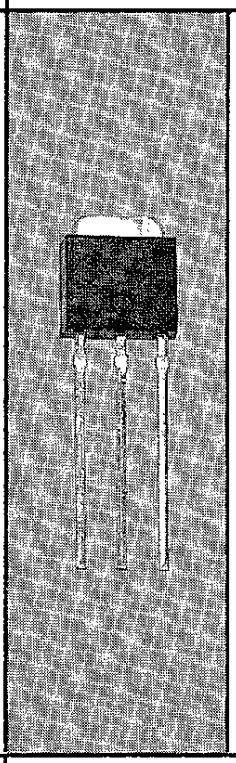


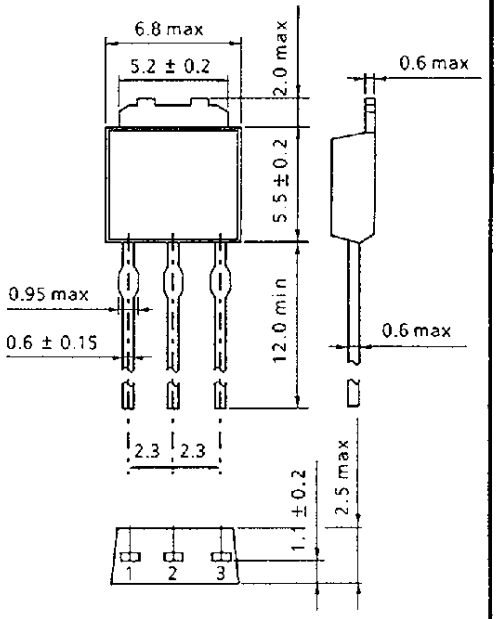
Unit: mm



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

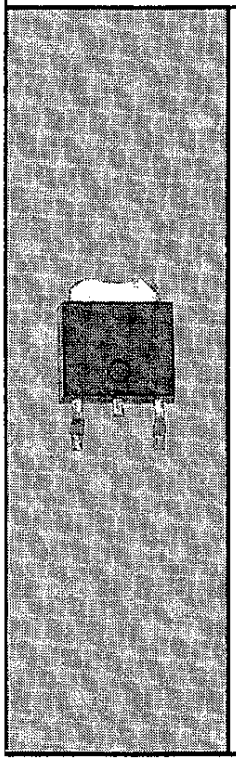
DP (Straight)

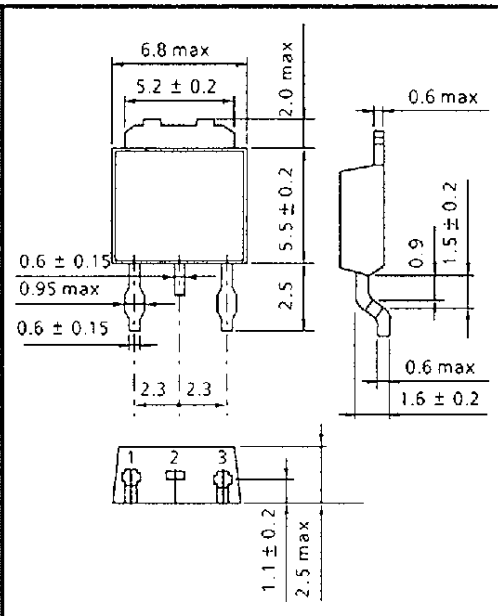




1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

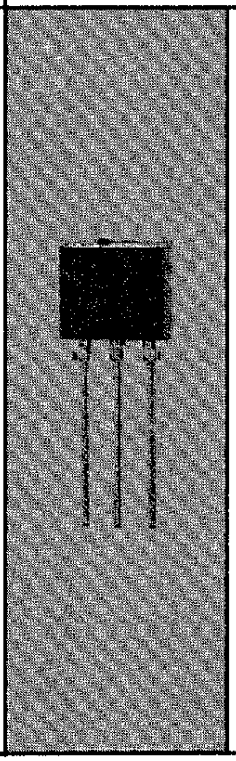
DP (Lead Forming)





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

TPS



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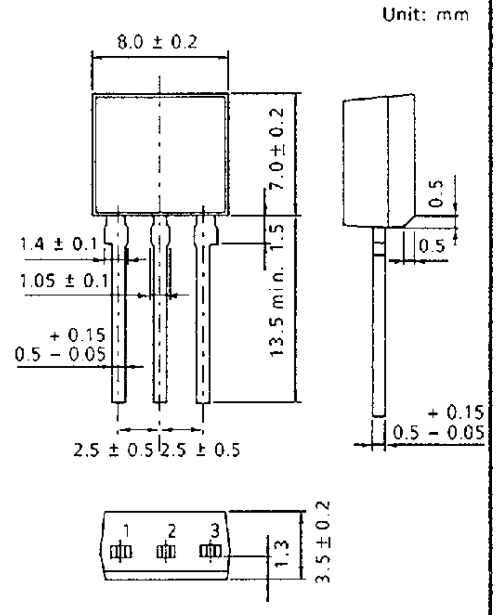
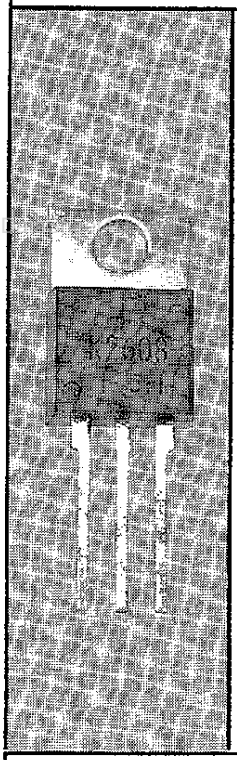


1. SOURCE
2. DRAIN
3. GATE

TO-220AB



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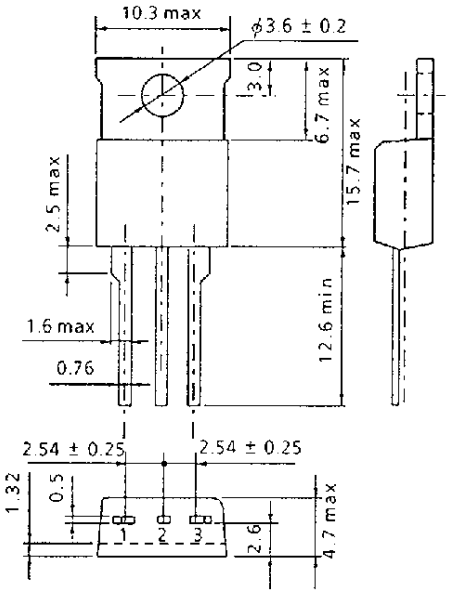
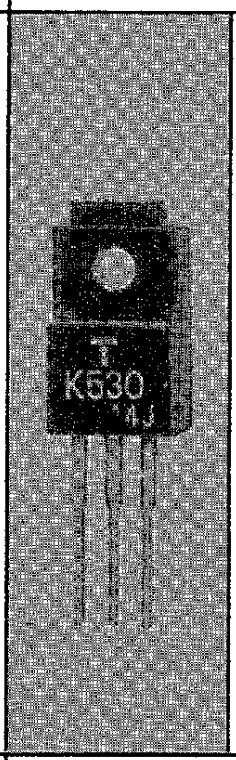
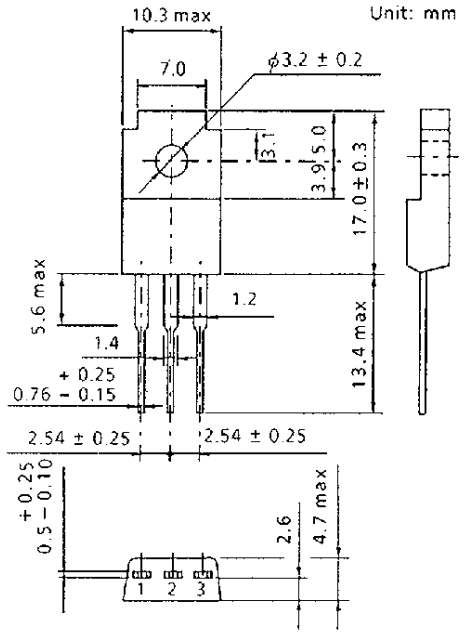


1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

TO-220 (IS)

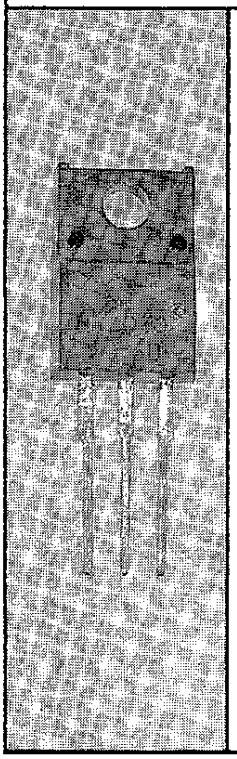


Unit: mm



1. GATE
2. DRAIN
3. SOURCE

TO-220 (NIS)



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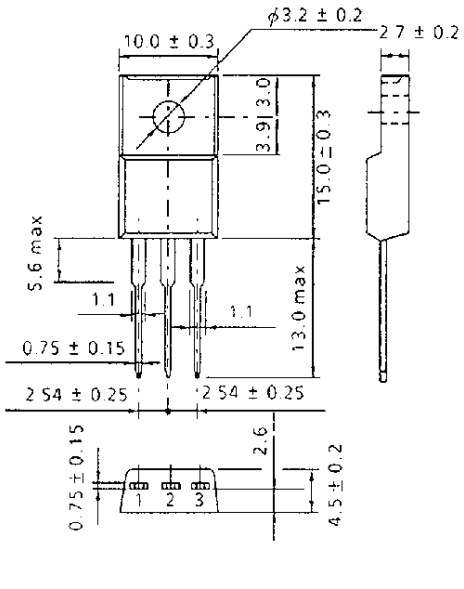
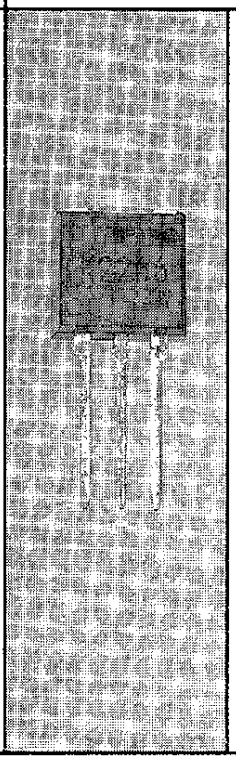
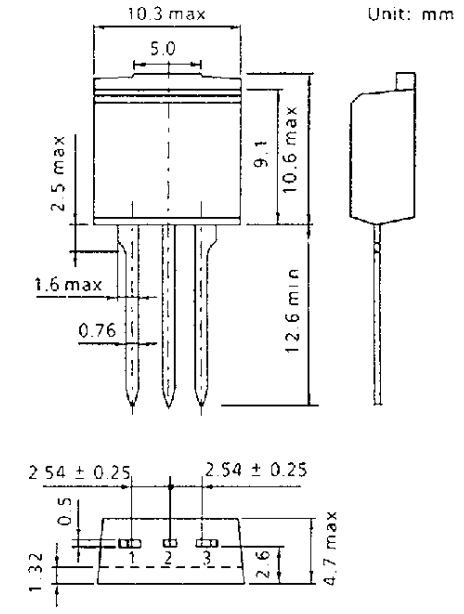


1. GATE
2. DRAIN
3. SOURCE

TO-220FL

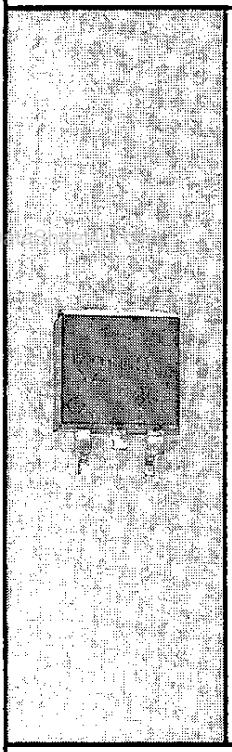


Unit: mm



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

TO-220SM



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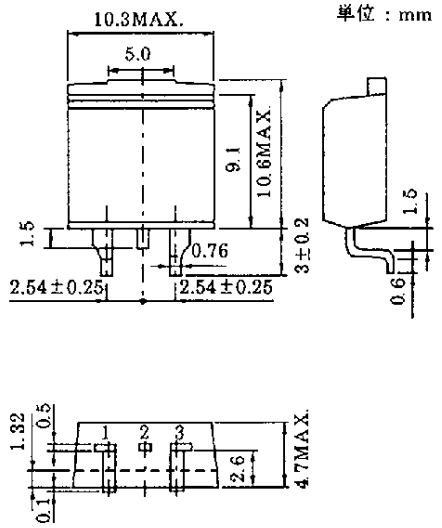
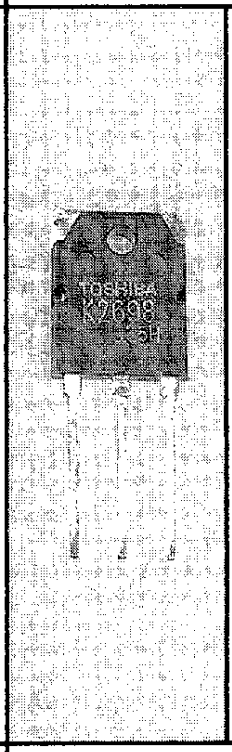


1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

TO-3P (N)



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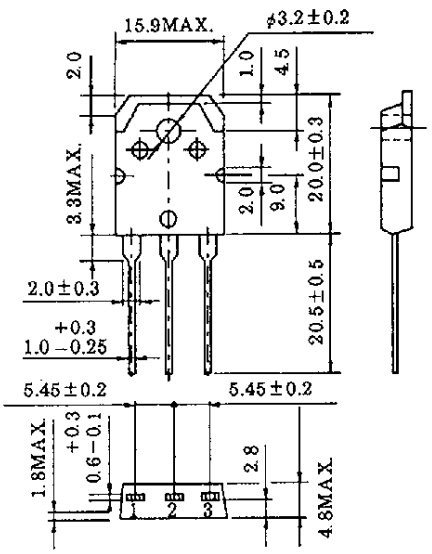
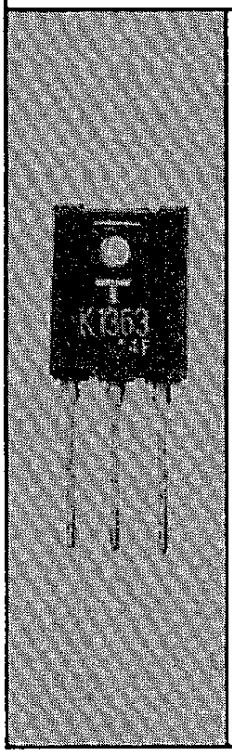


1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

TO-3P (N) IS



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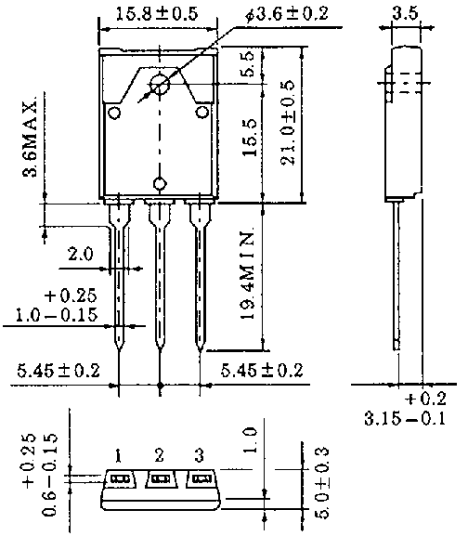
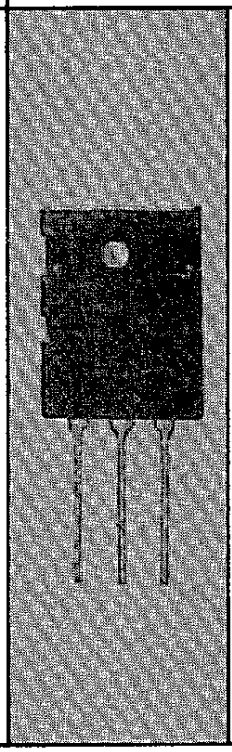
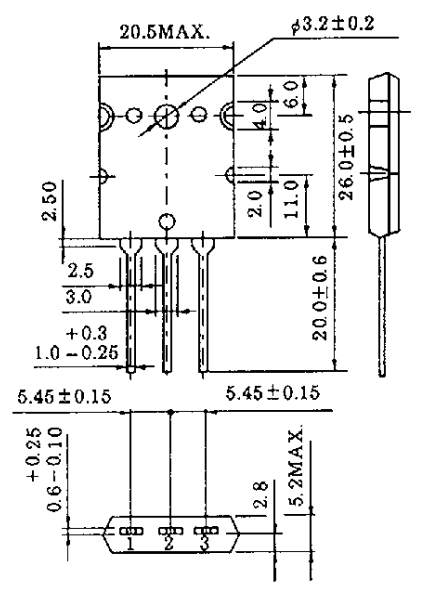


1. GATE
2. DRAIN
3. SOURCE

TO-3P (L)



単位：mm



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