

# 2SK1357

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

- Low Drain-Source ON Resistance :  $R_{DS(ON)} = 2.5\Omega$  (Typ.)
- High Forward Transfer Admittance :  $|Y_{fs}| = 2.0S$  (Typ.)
- Low Leakage Current :  $I_{DSS} = 300\mu A$  (Max.) @  $V_{DS} = 720V$
- 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		$V_{DSS}$	900	V
Drain-Gate Voltage ( $R_{GS} = 20k\Omega$ )		$V_{DGR}$	900	V
Gate-Source Voltage		$V_{GSS}$	$\pm 30$	V
Drain Current	DC	$I_D$	5	A
	Pulse	$I_{DP}$	15	
Drain Power Dissipation ( $T_c = 25^\circ C$ )		$P_D$	125	W
Channel Temperature		$T_{ch}$	150	$^\circ C$
Storage Temperature Range		$T_{stg}$	$-55 \sim 150$	$^\circ C$

THERMAL CHARACTERISTICS

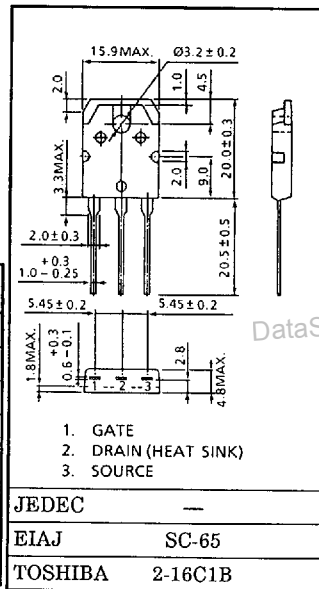
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	1.0	$^\circ C/W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	50	$^\circ C/W$

THIS TRANSISTOR IS AN ELECTROSTATIC SENSITIVE DEVICE.

PLEASE HANDLE WITH CAUTION.

INDUSTRIAL APPLICATIONS

Unit in mm



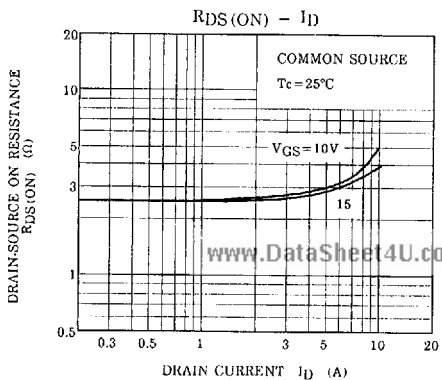
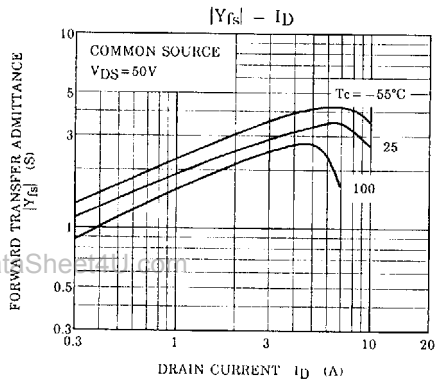
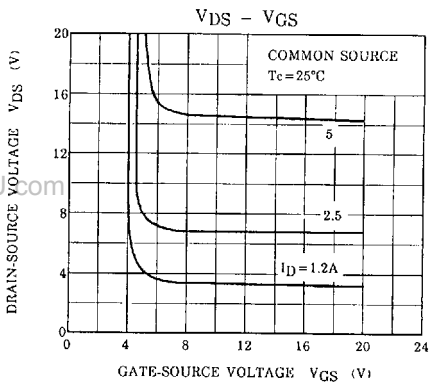
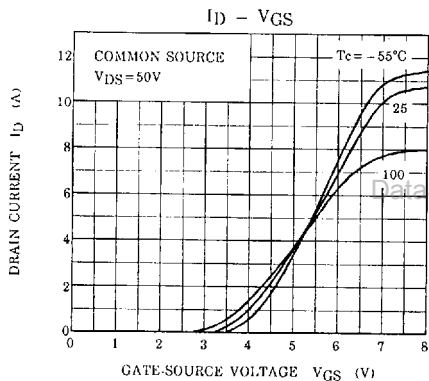
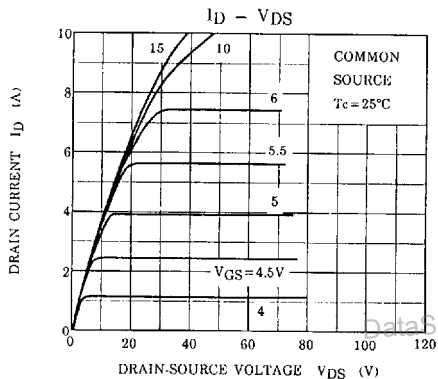
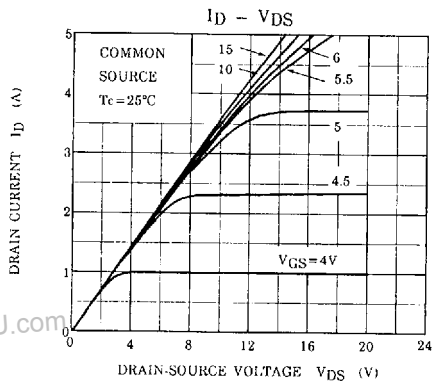
Weight : 4.6g

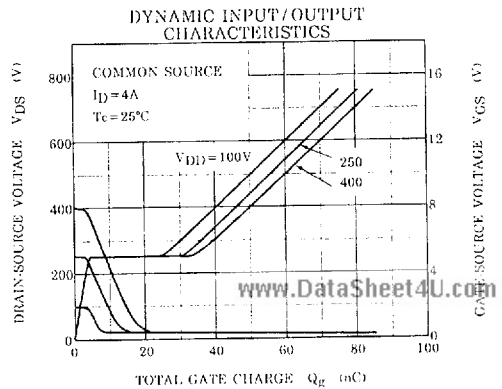
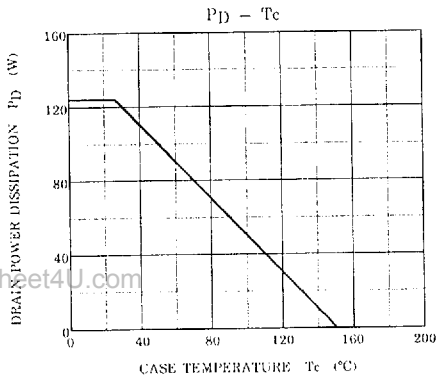
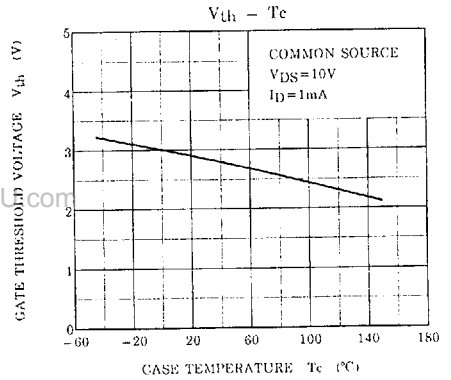
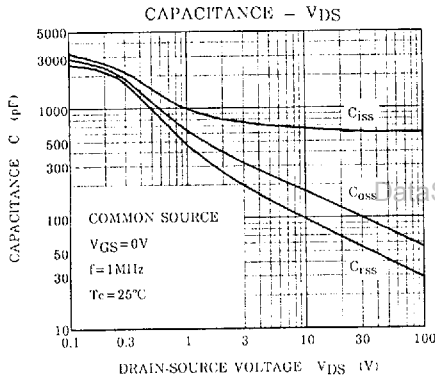
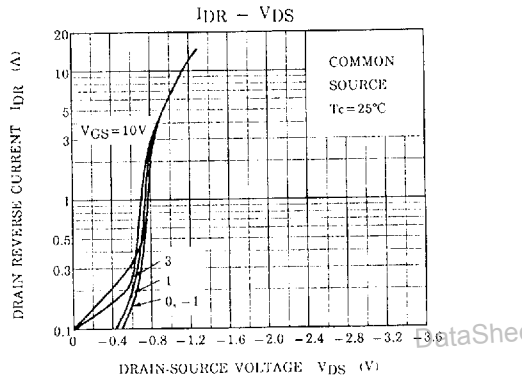
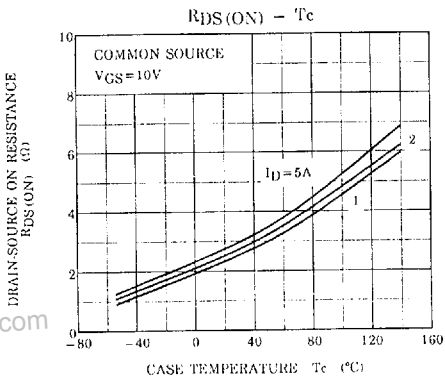
## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

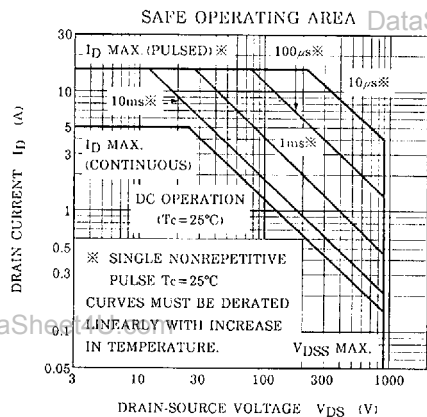
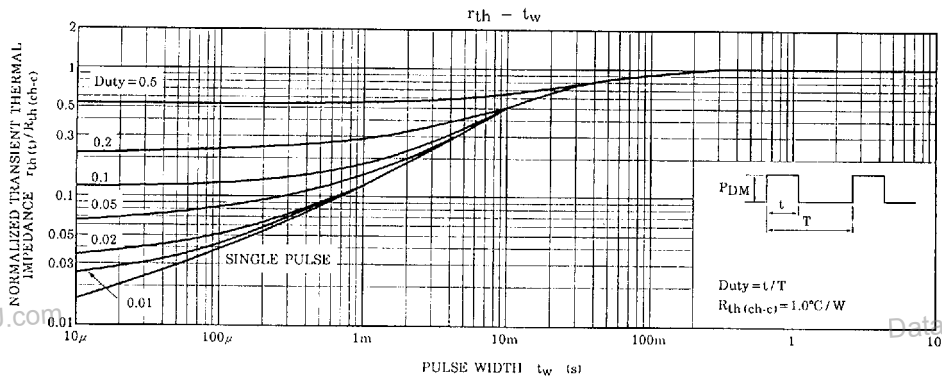
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		$I_{GSS}$	$V_{GS} = \pm 25V, V_{DS} = 0V$	—	—	$\pm 100$	nA
Drain Cut-off Current		$I_{DSS}$	$V_{DS} = 720V, V_{GS} = 0V$	—	—	300	$\mu A$
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = 10mA, V_{GS} = 0V$	900	—	—	V
Gate Threshold Voltage		$V_{th}$	$V_{DS} = 10V, I_D = 1mA$	1.5	—	3.5	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D = 2A, V_{GS} = 10V$	—	2.5	2.8	$\Omega$
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 20V, I_D = 2A$	1.0	2.0	—	S
Input Capacitance		$C_{iss}$	$V_{DS} = 25V, V_{GS} = 0V, f = 1MHz$	—	700	1000	pF
Reverse Transfer Capacitance		$C_{rss}$		—	55	90	
Output Capacitance		$C_{oss}$		—	100	150	
Switching Time	Rise Time	$t_r$	<p><math>I_D = 2A</math> <math>V_{GS} = 10V</math> <math>V_{OUT}</math> <math>R_L = 200\Omega</math> <math>V_{IN} : t_r, t_f &lt; 5ns, V_{DD} = 400V</math> Duty <math>\leq 1\%</math>, <math>t_w = 10\mu s</math></p>	—	18	35	ns
	Turn-on Time	$t_{on}$		—	30	60	
	Fall Time	$t_f$		—	12	25	
	Turn-off Time	$t_{off}$		—	70	140	
Total Gate Charge (Gate-Source Plus Gate-Drain)		$Q_g$	$V_{DD} = 400V, V_{GS} = 10V, I_D = 4A$	—	60	120	nC
Gate-Source Charge		$Q_{gs}$		—	35	—	
Gate-Drain ("Miller") Charge		$Q_{gd}$		—	22	—	

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

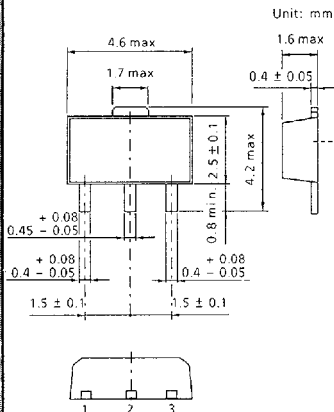
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	$I_{DR}$	—	—	—	4	A
Pulse Drain Reverse Current	$I_{DRP}$	—	—	—	—	—
Diode Forward Voltage	$V_{DSF}$	$I_{DR} = 4A, V_{GS} = 0V$	—	—	-1.9	V
Reverse Recovery Time	$t_{rr}$	$I_{DR} = 4A, V_{GS} = 0V$	—	1000	—	ns
Reverse Recovered Charge	$Q_{rr}$	$dI_{DR} / dt = 100A / \mu s$	—	0.13	—	$\mu C$





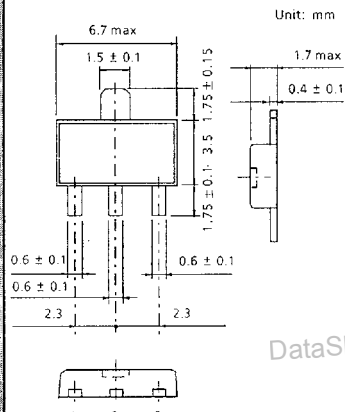


## POWER-MINI (SOT-89)



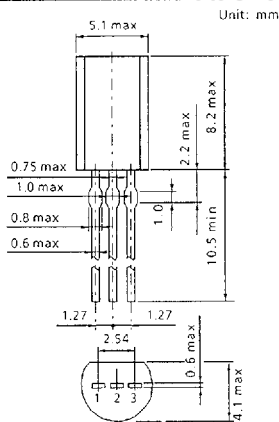
1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

## SP (SOT-223)



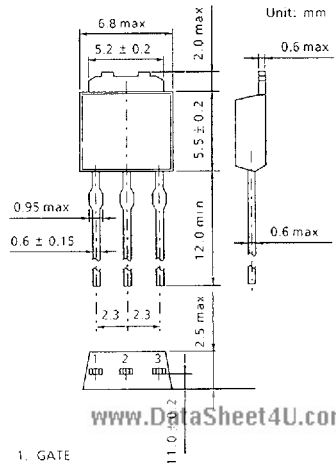
1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

## TO92-MOD



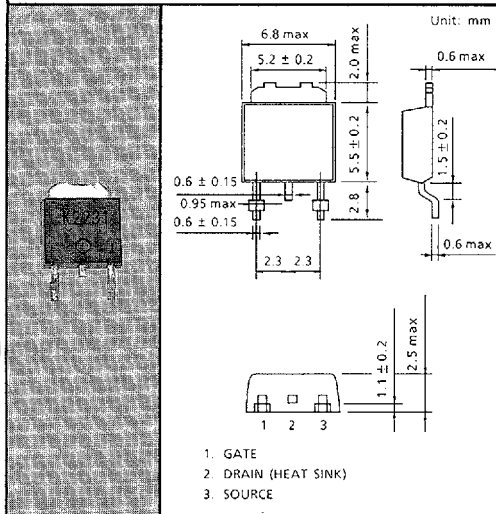
1. SOURCE
2. DRAIN
3. GATE

## POWER-MOLD (Straight)

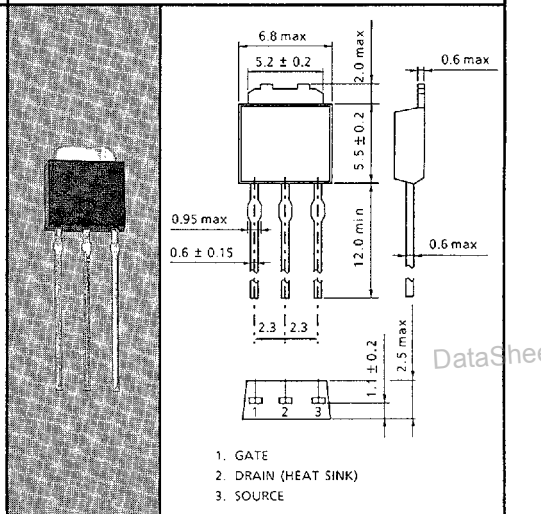


1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

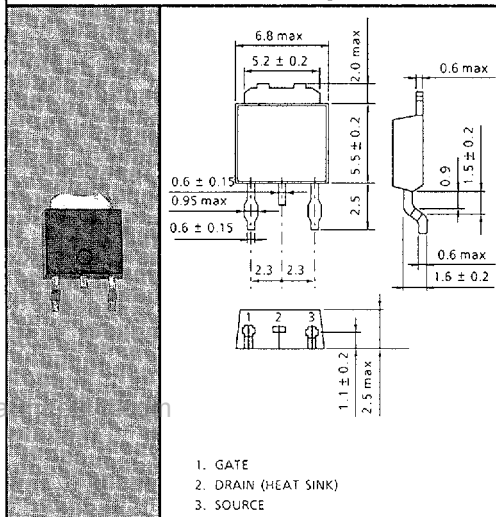
## POWER-MOLD (Lead Formed)



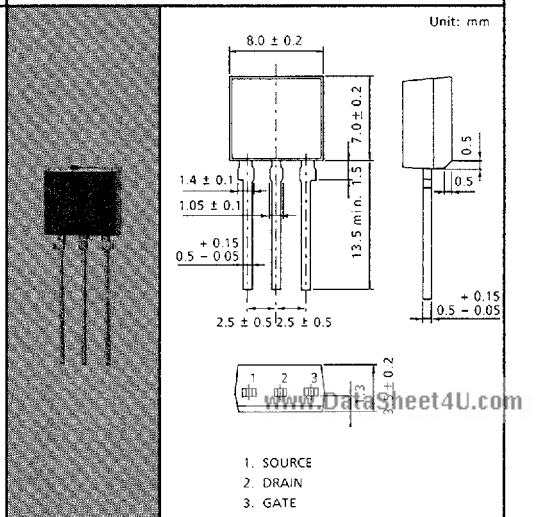
## DP (Straight)



## DP (Lead Forming)

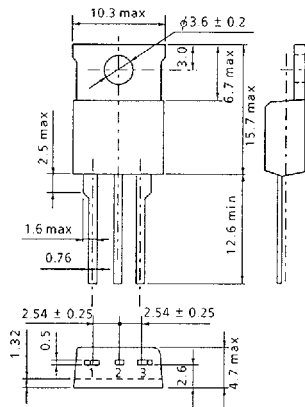


## TPS



TO-220AB

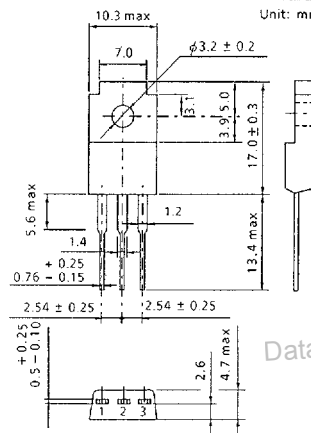
Unit: mm



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

TO-220 (IS)

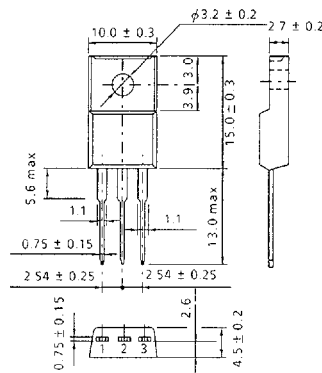
Unit: mm



1. GATE
2. DRAIN
3. SOURCE

TO-220 (NIS)

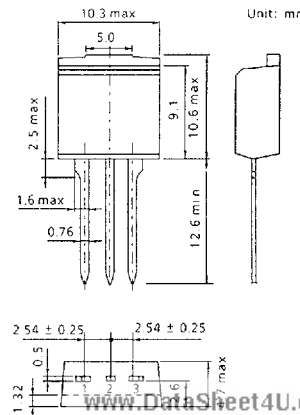
Unit: mm



1. GATE
2. DRAIN
3. SOURCE

TO-220FL

Unit: mm

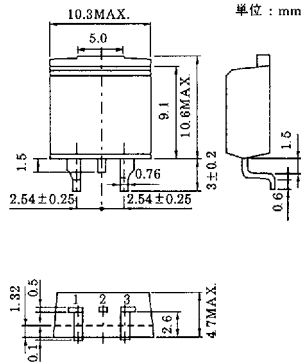


1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE



TO-220SM

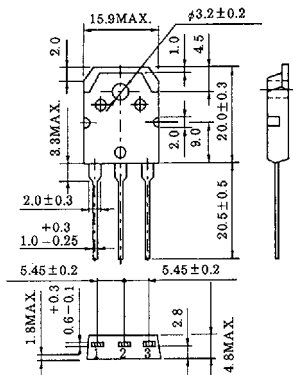
單位 : mm



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

TO-3P (N)

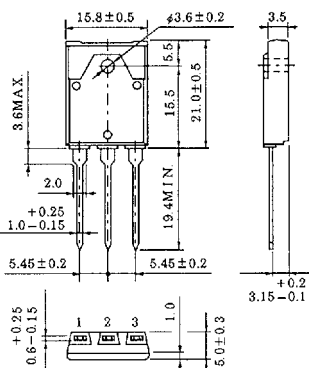
單位 : mm



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

TO-3P (N) IS

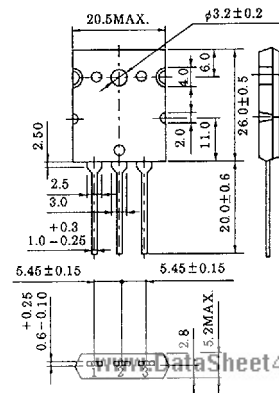
單位 : mm



1. GATE
2. DRAIN
3. SOURCE

TO-3P (L)

單位 : mm



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