

# KSG13003AR



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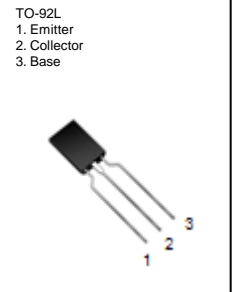
## Switch Mode series NPN silicon Power Transistor

- High voltage, high speed power switching

1.5 Amperes  
NPN Silicon Power Transistor  
1.5 Watts

### Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

CHARACTERISTICS	SYMBOL	RATING	UNIT
Collector-Base Voltage	$V_{CBO}$	700	V
Collector-Emitter Voltage	$V_{CEO}$	400	V
Emitter-Base Voltage	$V_{EBO}$	9	V
Collector Current(DC)	$I_C$	1.5	A
Collector Current(Pulse)	$I_{CP}$	3	A
Base Current	$I_B$	0.75	A
Collector Dissipation( $T_C=25^\circ\text{C}$ )	$P_C$	1.5	W
Storage Temperature	$T_{STG}$	150	$^\circ\text{C}$
Max. Operating Junction Temperature	$T_J$	-65~150	$^\circ\text{C}$



### Electrical Characteristics $T_C=25^\circ\text{C}$ unless otherwise noted

CHARACTERISTICS	SYMBOL	Test Condition	Min	Typ.	Max	Unit
Collector-Base Breakdown Voltage	$V_{CBO}$	$I_C=500\mu\text{A}, I_E=0$	700			V
Collector-Emitter Breakdown Voltage	$V_{CEO}$	$I_C=5\text{mA}, I_B=0$	400			V
Emitter Cut-off Current	$I_{EBO}$	$V_{EB}=9\text{V}, I_C=0$			10	$\mu\text{A}$
*DC Current Gain	$h_{FE1}$ $h_{FE2}$	$V_{CE}=2\text{V}, I_C=0.5\text{A}$ $V_{CE}=2\text{V}, I_C=1\text{A}$	9 5		35	
*Collector-Emitter Saturation Voltage	$V_{CE}(\text{sat})$	$I_C=0.5\text{A}, I_B=0.1\text{A}$ $I_C=1\text{A}, I_B=0.25\text{A}$ $I_C=1.5\text{A}, I_B=0.5\text{A}$			0.5 1.0 3.0	V V V
*Base-Emitter Saturation Voltage	$V_{BE}(\text{sat})$	$I_C=0.5\text{A}, I_B=0.1\text{A}$ $I_C=1\text{A}, I_B=0.25\text{A}$			1.0 1.2	V V
Output Capacitance	$C_{ob}$	$V_{CB}=10\text{V}, f=0.1\text{MHz}$		21		pF
Current Gain Bandwidth Product	$f_T$	$V_{CE}=10\text{V}, I_C=0.1\text{A}$	4			MHz
Turn on Time	$t_{on}$	$V_{CC}=125\text{V}, I_C=2\text{A}$ $I_{B1}=0.2\text{A}, I_{B2}=-0.2\text{A}$ $R_L=125\Omega$			1.1	$\mu\text{s}$
Storage Time	$t_{stg}$				4.0	$\mu\text{s}$
Fall Time	$t_F$				0.7	$\mu\text{s}$

\* Pulse Test: Pulse Widths $\leq 300\mu\text{s}$ , Duty Cycles $\leq 2\%$

Note.

hFE1 Classification	R	9 ~ 16
	O	15 ~ 25
	Y	20 ~ 30

Package Mark information.

S AR 13003 YWW Z	R	Pin type (ECB)
	YWW	Y; year code, WW; week code
	Z	hFE1 Classification

# Typical Characteristics

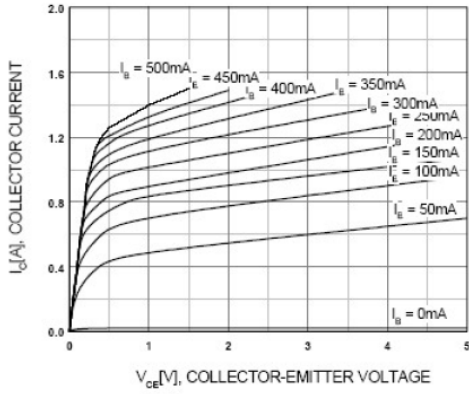


Figure 1. Static Characteristic

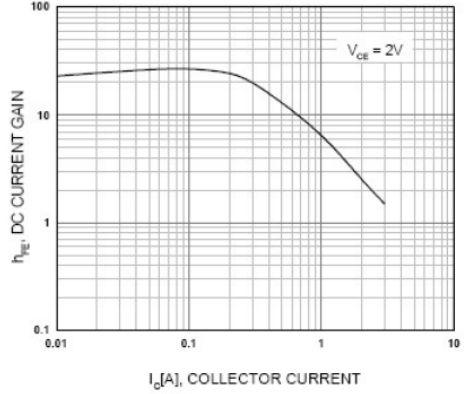


Figure 2. DC current Gain

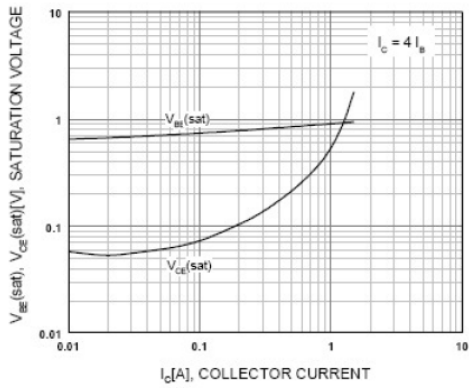


Figure 3. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

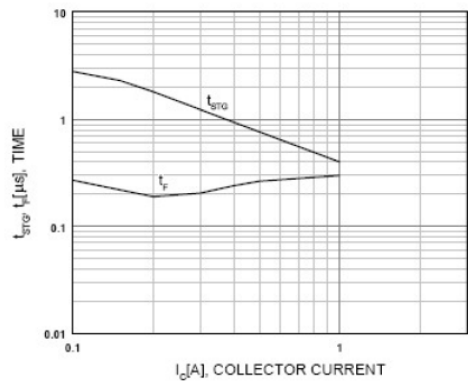
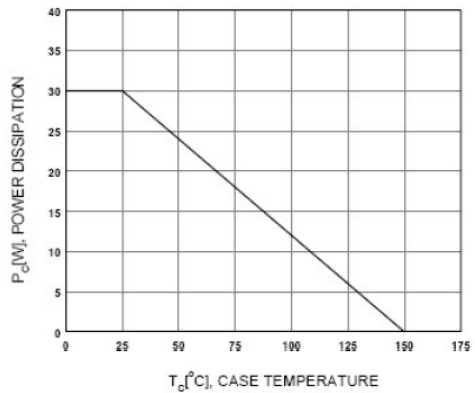
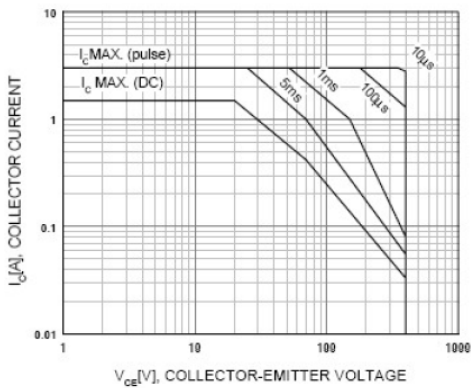
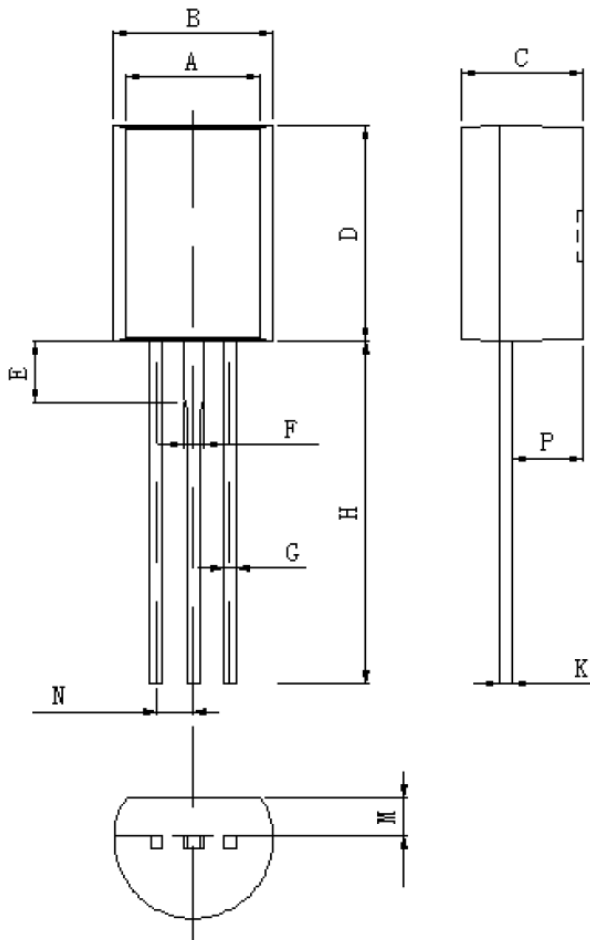


Figure 4. Switching Time



## Package Dimensions

## TO-92L



DIM	MILLIMETERS
A	5.8 $\pm$ 0.2
B	6.3 $\pm$ 0.2
C	4.8 $\pm$ 0.2
D	8.6 $\pm$ 0.2
E	3.0 $\pm$ 0.2
F	1.0 $\pm$ 0.2
G	0.5 $\pm$ 0.1
H	13.0 $\pm$ 0.2
K	0.5 $\pm$ 0.1
M	1.5 $\pm$ 0.2
N	1.4 $\pm$ 0.2
P	2.9 $\pm$ 0.3

Dimensions in Millimeters