

PNP Transistors for Switching Applications

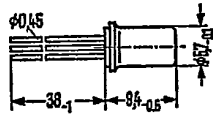
ASY 48  
ASY 70

SIEMENS AKTIENGESELLSCHAFT

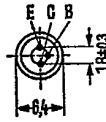
ASY 48 and ASY 70 are alloyed germanium PNP transistors in 1 A 3 DIN 41871 case (similar to TO 1). The leads are electrically insulated from the case. The collector terminal is marked by a red dot at the edge of the case. The transistors are particularly suitable for switching applications.

Not for new design

Type	Ordering code
ASY 48 <sup>1)</sup>	Q60118-Y82
ASY 48 IV	Q60118-Y48-D
ASY 48 V	Q60118-Y48-E
ASY 48 VI	Q60118-Y48-F
ASY 70 <sup>1)</sup>	Q60118-Y81
ASY 70 IV	Q60118-Y70-D
ASY 70 V	Q60118-Y70-E
ASY 70 VI	Q60118-Y70-F
Heat sink	Q62901-B1



Approx. weight 1 g



Dimensions in mm

Maximum ratings

	ASY 48	ASY 70	
Collector-emitter voltage	-V <sub>CEO</sub> 45	30	V
Collector-emitter voltage (V <sub>BE</sub> ≥ 0.2 V)	-V <sub>CEV</sub> 64	32	V
Collector-base voltage	-V <sub>CBO</sub> 64	32	V
Emitter-base voltage	-V <sub>EBO</sub> 16	16	V
Collector current	-I <sub>C</sub> 300	300	mA
Base current	-I <sub>B</sub> 60	60	mA
Junction temperature	T <sub>j</sub> 90	90	°C
Storage temperature range	T <sub>stg</sub> -55 to +75	-55 to +75	°C
Total power dissipation (T <sub>case</sub> = 45°C)	P <sub>tot</sub> 900	900	mW

Thermal resistance

Junction to ambient air	R <sub>thJA</sub> ≤ 300	≤ 300	K/W
Junction to case	R <sub>thJC</sub> ≤ 50	≤ 50	K/W

Static characteristics (T<sub>amb</sub> = 25°C)

	ASY 48	ASY 70	
Collector cutoff current (-V <sub>CBO</sub> = 10 V)	-I <sub>CBO</sub> < 10	3 (< 10)	μA
Collector cutoff current (-V <sub>CBO</sub> = 32 V)	-I <sub>CBO</sub> -	5 (< 18)	μA
Collector cutoff current (-V <sub>CBO</sub> = 64 V)	-I <sub>CBO</sub> 6 (< 18)	-	μA
Emitter cutoff current (-V <sub>EBO</sub> = 5 V)	-I <sub>EBO</sub> -	3	μA
Emitter cutoff current (-V <sub>EBO</sub> = 16 V)	-I <sub>EBO</sub> 4 (< 18)	4 (< 18)	μA
Collector cutoff current (-V <sub>CEV</sub> = 32 V; V <sub>BE</sub> ≥ 0.2 V)	-I <sub>CEV</sub> -	5 (< 18)	μA
Collector cutoff current (-V <sub>CEV</sub> = 64 V; V <sub>BE</sub> ≥ 0.2 V)	-I <sub>CEV</sub> 6 (< 18)	-	μA
Collector-emitter saturation voltage (I <sub>C</sub> = 300 mA; I <sub>B</sub> = 15 mA)	-V <sub>CEsat</sub> 0.15 (< 0.25)	0.15 (< 0.25)	V

<sup>1)</sup> If the order does not include any exact indication of the current amplification group desired, a transistor of a current amplification group just available from stock will be delivered.

**Static characteristics ( $T_{amb} = 25^\circ\text{C}$ )**

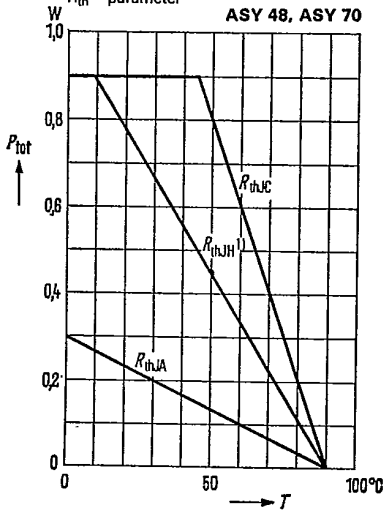
The transistors are grouped according to the DC current gain  $h_{FE}$  at  $-I_C = 100\text{ mA}$  and are marked by Roman numerals.

$h_{FE}$ group		IV	V	VI	
$-I_C$ mA	$-V_{CE}$ V	$h_{FE}$ $I_C/I_B$	$h_{FE}$ $I_C/I_B$	$h_{FE}$ $I_C/I_B$	$-V_{BE}$ V
2	0.5	47	79	114	0.13 (<0.20)
100	0.5	45 (30 to 60)	75 (50 to 100)	110 (75 to 150)	0.32 (<0.55)
300	0.5	35	58	86	0.44 (<0.80)

**Dynamic characteristics ( $T_{amb} = 25^\circ\text{C}$ )**

	ASY 48	ASY 70	
Transition frequency $-I_C = 5\text{ mA}$ ; $-V_{CE} = 5\text{ V}$	$f_T$ 1.2	1.5	MHz
Base intrinsic resistance	$r_{bb'}$ 75 (<200)	75 (<200)	$\Omega$
Collector-base capacitance $-V_{CBO} = 5\text{ V}$	$C_{CBO}$ 25 (<40)	25 (<40)	pF
Switching times			
Current selection			
Operating point: $-I_C = 100\text{ mA}$ ; $U = 1.5$ to $3$ ; $a = 1$ to $2$ ; $-V_{CC} = 10\text{ V}$	$t_{on}$ 3.5 (<10)	3.5 (<10)	$\mu\text{s}$
Voltage selection	$t_s$ 1.1 (<3)	1.1 (<3)	$\mu\text{s}$
Operating point: $-I_C = 100\text{ mA}$ ; $-V_{BBE1} = 4\text{ V}$ ; $V_{BBE2} = 1\text{ V}$ ; $R_{BB} = 100\ \Omega$	$t_f$ 2.1 (<7)	2.1 (<7)	$\mu\text{s}$
	$t_{on}$ 0.25 (<1)	0.15 (<1)	$\mu\text{s}$
	$t_s$ 1.3 (<2.5)	1.3 (<2.5)	$\mu\text{s}$
	$t_f$ 0.5 (<1.5)	0.5 (<1.5)	$\mu\text{s}$

Total perm. power dissipation versus temperature  $P_{tot} = f(T)$ ;  $R_{th}$  = parameter



1) Heat sink aluminum  $12.5\text{ cm}^2 \times 2\text{ mm}$

Permissible pulse load  $r_{thJC} = f(t)$  v = parameter

