

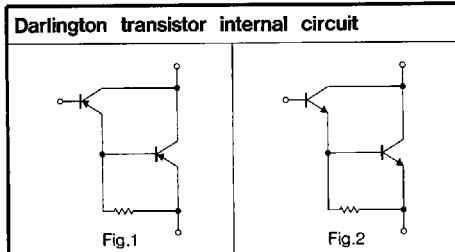
# Transistors

From very small EM3 type package to high power PSD package (the power dissipation is equivalent to TO-220,  $P_c=35W$ ) transistors.

## EM3 · UMT · SMT

Three types are available to allow the most suitable package depending on size specifications.

| Application    | Package           |            |             | $V_{CE0}$ (V)<br>* $V_{CES}$ | $I_c$ (mA) | $P_c$ (mW) ( $T_a=25^\circ C$ ) |          | $h_{FE}$ | Available<br>$h_{FE}$ Ranking code | $V_{CE}$ (V) | $I_c$ (mA) | Circuit |
|----------------|-------------------|------------|-------------|------------------------------|------------|---------------------------------|----------|----------|------------------------------------|--------------|------------|---------|
|                | EM3 (1608)        | UMT (2125) | SMT (2916)  |                              |            | EM3                             | UMT, SMT |          |                                    |              |            |         |
|                | Part No.          |            |             |                              |            |                                 |          |          |                                    |              |            |         |
| Low Noise      | —                 | —          | 2SA1037AKLN | -40                          | -150       | —                               | 200      | 390~820  | E                                  | -6           | -1         | —       |
|                | —                 | —          | 2SA1455K    | -50                          | -150       | —                               | 200      | 180~560  | R S                                | -6           | -1         | —       |
|                | —                 | —          | 2SA1037AK   | -120                         | -50        | —                               | 200      | 180~820  | R S E                              | -6           | -2         | —       |
|                | —                 | —          | 2SC2412KLN  | 40                           | 150        | —                               | 200      | 390~820  | E                                  | 6            | 1          | —       |
|                | —                 | —          | 2SC2412KLN  | 50                           | 150        | —                               | 200      | 180~560  | R S                                | 6            | 1          | —       |
|                | —                 | —          | 2SC3722K    | 120                          | 50         | —                               | 200      | 180~820  | R S E                              | 6            | 2          | —       |
| Pre Amp        | —                 | 2SC4081LN  | —           | 40                           | 100        | —                               | 200      | 180~820  | R S E                              | 6            | 1          | —       |
|                | 2SA1774           | 2SA1576A   | 2SA1037AK   | -50                          | -150       | 150                             | 200      | 120~560  | Q R S                              | -6           | -1         | —       |
|                | —                 | 2SA1579    | 2SA1514K    | -120                         | -50        | —                               | 200      | 180~820  | R S E                              | -6           | -2         | —       |
|                | 2SC4617           | 2SC4081    | 2SC2412K    | 50                           | 150        | 150                             | 200      | 120~560  | Q R S                              | 6            | 1          | —       |
|                | —                 | 2SC4102    | 2SC3906K    | 120                          | 50         | —                               | 200      | 180~820  | R S E                              | 6            | 2          | —       |
| Driver         | —                 | 2SC4723    | 2SC4642K    | 25                           | 100        | —                               | 200      | 180~560  | R S                                | 6            | 1          | —       |
|                | —                 | 2SA1577    | 2SA1036K    | -32                          | -500       | —                               | 200      | 82~390   | P Q R                              | -3           | -10        | —       |
|                | —                 | —          | 2SB1051K    | -32                          | -1000      | —                               | 200      | 82~390   | P Q R                              | -3           | -100       | —       |
|                | —                 | —          | 2SB1197K    | -32                          | -800       | —                               | 200      | 82~390   | P Q R                              | -3           | -100       | —       |
|                | —                 | —          | 2SB1198K    | -80                          | -500       | —                               | 200      | 82~390   | P Q R                              | -3           | -100       | —       |
|                | —                 | 2SC4097    | 2SC2411K    | 32                           | 500        | —                               | 200      | 82~390   | P Q R                              | 3            | 10         | —       |
|                | —                 | 2SD1949    | 2SD1484K    | 50                           | 500        | —                               | 200      | 82~390   | P Q R                              | 3            | 100        | —       |
|                | —                 | —          | 2SD1781K    | 32                           | 800        | —                               | 200      | 82~390   | P Q R                              | 3            | 100        | —       |
|                | —                 | —          | 2SD1782K    | 80                           | 500        | —                               | 200      | 82~390   | P Q R                              | 3            | 100        | —       |
|                | Low $V_{CE(sat)}$ | —          | —           | 2SD1757K                     | 15         | 500                             | —        | 200      | 120~560                            | Q R S        | 3          | 100     |
| Darlington     | —                 | —          | 2SB852K     | -32*                         | -300       | —                               | 200      | 5k~      | None                               | -5           | -100       | Fig.1   |
|                | —                 | —          | 2SD1383K    | 32*                          | 300        | —                               | 200      | 5k~      | None                               | 5            | 100        | Fig.2   |
| Chroma         | —                 | —          | 2SC4061K    | 300                          | 100        | —                               | 200      | 39~180   | M N P                              | 10           | 10         | —       |
| High $h_{FE}$  | —                 | —          | 2SD2114K    | 20                           | 500        | —                               | 200      | 560~2700 | U V W                              | 3            | 10         | —       |
| High $V_{EBO}$ | —                 | 2SD2351    | 2SD2226K    | 50                           | 150        | —                               | 200      | 560~2700 | U V W                              | 5            | 1          | —       |



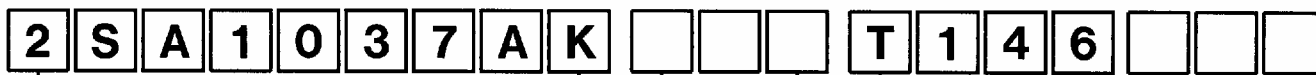
## EM3 · UMT · SMT High frequency type

| Application | Package            |            |            | $V_{CE0}$ (V) | $I_c$ (mA) | $f_T$ (MHz) | $C_{ob}$ (pF) | $h_{FE}$ | Available<br>$h_{FE}$ Ranking code | $V_{CE}$ (V) | $I_c$ (mA) |     |
|-------------|--------------------|------------|------------|---------------|------------|-------------|---------------|----------|------------------------------------|--------------|------------|-----|
|             | EM3 (1608)         | UMT (2125) | SMT (2916) |               |            |             |               |          |                                    |              |            |     |
|             | Part No.           |            |            |               |            |             |               |          |                                    |              |            |     |
| AM          | FM IF AM RF        | 2SA1821    | 2SA1808    | 2SA1733K      | -20        | -30         | 400           | 0.85     | 39~180                             | M N P        | -10        | -1  |
|             |                    | —          | 2SC4128    | 2SC4018K      | 32         | 100         | 230           | 1.8      | 56~180                             | N P          | 6          | 2   |
|             |                    | 2SC4618    | 2SC4098    | 2SC2413K      | 25         | 50          | 300           | 1.3      | 56~270                             | N P Q        | 6          | 1   |
| SW          | 2SC5073            | 2SC4700    | 2SC4699K   | 20*           | 200        | 250         | 2.0           | 39~180   | M N P                              | 5            | 5          |     |
|             | 2SC5072            | 2SC4912    | 2SC4911K   | 20*           | 200        | 450         | 2.5           | 56~180   | N P                                | 5            | 5          |     |
| FM          | FM RF Mix. Osc.    | 2SC4649    | 2SC4099    | 2SC2059K      | 20         | 20          | 500           | 1.4      | 39~180                             | M N P        | 6          | 1   |
|             | Tuner IF           | —          | 2SC4772    | 2SC4771K      | 25         | 50          | 600           | 0.95     | 27~180                             | L M N P      | 10         | 10  |
| VHF         | RF SW              | 2SA1885    | 2SA1886    | —             | -10        | -100        | 650           | 1.2      | 180~560                            | R S          | -5         | -10 |
|             |                    | 2SC4997    | 2SC4998    | —             | 10         | 100         | 240           | 1.4      | 560~2700                           | U V W        | 5          | 10  |
|             |                    | —          | 2SC4773    | 2SC4326LK     | 6          | 50          | 800           | 1.1      | 120~560                            | Q R S        | 5          | 5   |
|             |                    | —          | 2SC4774    | 2SC4713K      | 6          | 50          | 800           | 1.0      | 120~560                            | Q R S        | 5          | 5   |
| UHF         | TV Tuner Mix. Osc. | —          | 2SC4103    | 2SC3802K      | 25         | 30          | 1100          | 0.8      | 39~270                             | M N P Q      | 10         | 4   |
|             |                    | 2SC4619    | 2SC4100    | 2SC3082K      | 19         | 50          | 1100          | 1.0      | 39~270                             | M N P Q      | 10         | 5   |
|             |                    | 2SC4725    | 2SC4082    | 2SC3837K      | 18         | 50          | 1500          | 0.9      | 27~270                             | L M N P Q    | 10         | 10  |
|             |                    | —          | 2SC4084    | 2SC3839K      | 20         | 50          | 2000          | 0.8      | 27~270                             | L M N P Q    | 10         | 5   |
| —           | 2SC4726            | 2SC4083    | 2SC3838K   | 11            | 50         | 3200        | 0.8           | 27~270   | L M N P Q                          | 10           | 5          |     |

Note : \* 2SC4699K, 2SC4700, 2SC5073/2SC4911K, 2SC4912, 2SC5072 :  $V_{CES}$

●Product Designation

- When ordering, specify the type.
- Check each code against the tables shown below.
- Fill a space with the next character.



Part No.

Special code

- Omit for standard product.
- Factory assigned for custom product.

h<sub>FE</sub> Ranking code

Input h<sub>FE</sub> rank signal display  
 One rank preferred  Q  S  
 Multiple rank preferred  Q  S  
 (Min., Max. is displayed)

| Code | h <sub>FE</sub> Range |
|------|-----------------------|
| L    | 27~56                 |
| M    | 39~82                 |
| N    | 56~120                |
| P    | 82~180                |
| Q    | 120~270               |
| R    | 180~390               |
| S    | 270~560               |
| E    | 390~820               |
| U    | 560~1200              |
| V    | 820~1800              |
| W    | 1200~2700             |
| A    | 1k~                   |
| B    | 5k~                   |
| C    | 10k~                  |

Packaging

| Package | Code | Packaging style | Packaging style    | Direction                         | Quantity/package (pcs) |
|---------|------|-----------------|--------------------|-----------------------------------|------------------------|
| EM3     | TL   | Taping          | Embossed reel tape | 1 Pin side on sprocket hole side  | 3,000                  |
|         | TR   |                 |                    | 2 Pins side on sprocket hole side |                        |
| UMT     | T106 | Taping          | Embossed reel tape | 1 Pin side on sprocket hole side  | 3,000                  |
|         | T107 |                 |                    | 2 Pins side on sprocket hole side |                        |
| SMT     | T146 | Taping          | Embossed reel tape | 1 Pin side on sprocket hole side  | 3,000                  |
|         | T147 |                 |                    | 2 Pins side on sprocket hole side |                        |

(Unit : mm)

| Package         | EM3   | UMT  | SMT (SC-59/Japanese SOT-23)   |
|-----------------|---|--|---|
| Dimensions      | <p>(1) Emitter<br/>(2) Base<br/>(3) Collector</p> | <p>Each lead has same dimensions</p> <p>(1) Emitter<br/>(2) Base<br/>(3) Collector</p> | <p>All pins : same size</p> <p>(1) Emitter<br/>(2) Base<br/>(3) Collector</p> |
| Actual size     | -   | -  | -   |
| Enlarged (×3.0) |   |  |   |

# Transistors

EM3 · UMT · SMT

● Packaging Specifications

(Unit : mm)

