



NXP transistors in LFPAK56 – the true power package for smart efficiency

Full power in half the footprint

First bipolar transistors in LFPAK/Power-SO8

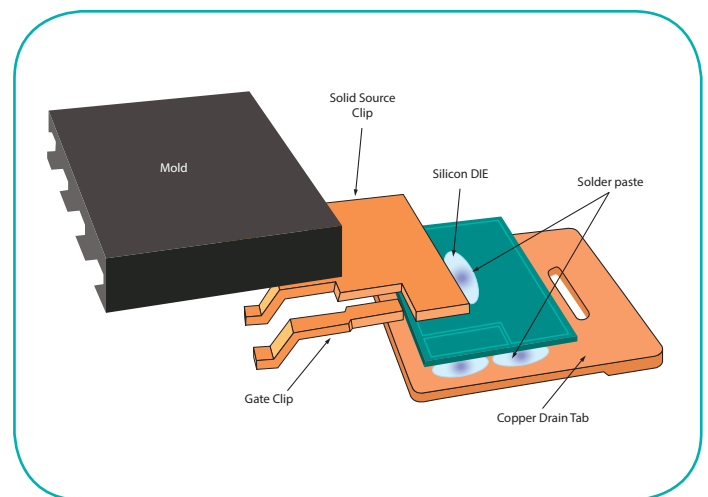
These high-power bipolar transistors, housed in LFPAK56 (Power-SO8) packages, deliver DPAK-like thermal and electrical performance in just half the footprint. Offering reliable, energy-efficient performance, they are AEC-Q101 qualified and support high-temperature operation (175 °C).

FEATURES AND BENEFITS

- ▶ 25 types up to 100 V and 15 A in single and double configurations
- ▶ High power dissipation (P_{tot})
- ▶ Suitable for high-temperature applications (175 °C)
- ▶ Space-saving 5 x 6 mm package outline is half the size of equivalent transistors in DPAK, SOT223, and other packages
- ▶ Low profile (1 mm)
- ▶ High reliability and mechanical ruggedness thanks to solid-copper clip (no wires)
- ▶ High energy efficiency due to less heat generation
- ▶ AECQ-101 qualified
- ▶ Future-proof, growing portfolio

APPLICATIONS

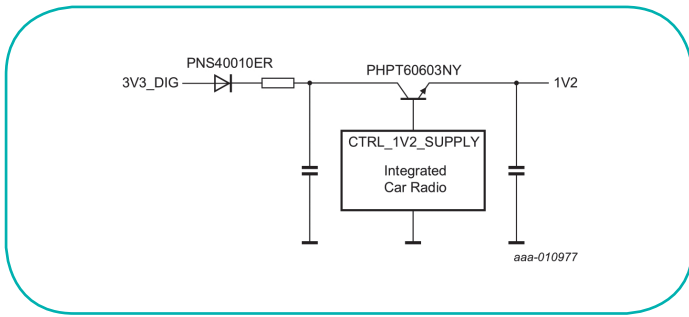
- ▶ Power management
- ▶ Motor drives
- ▶ Loadswitches
- ▶ Linear mode voltage regulators
- ▶ Backlighting applications



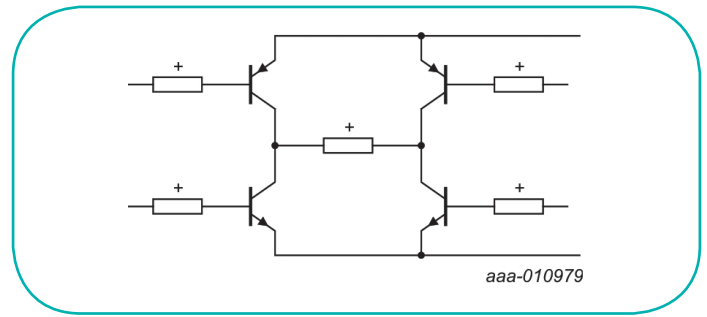
APPLICATION EXAMPLES

Car radio (PHPT60603NY)

External pass transistor, linear regulator

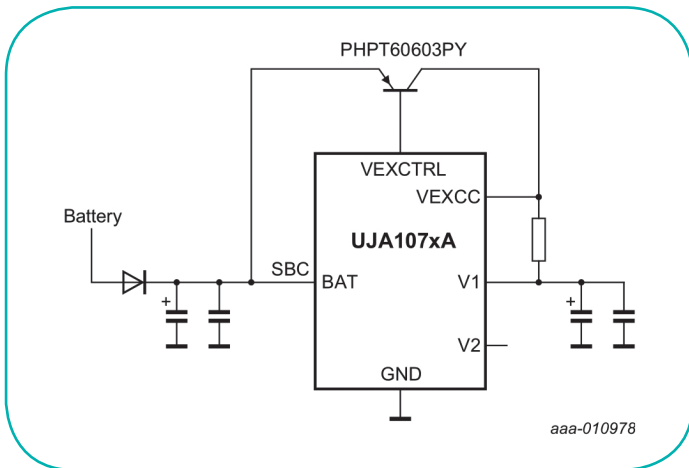


Motor drive (2x PHPT60603NY/PY) or a double LFPAK56D (PHPT610030NK/PK)

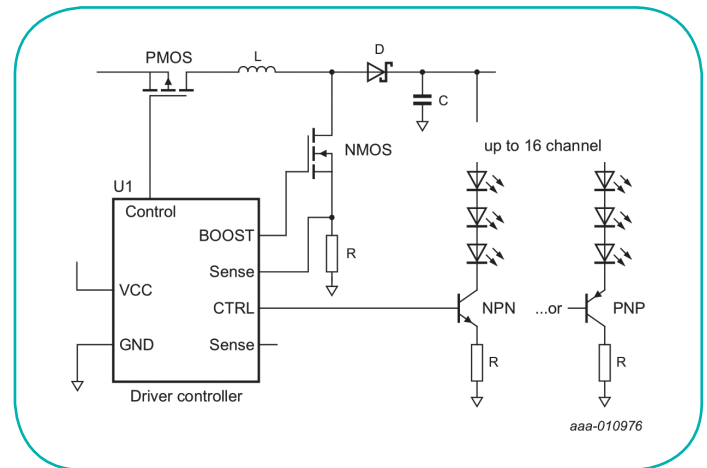


IVN – System Basis Chip (PHPT60603PY)

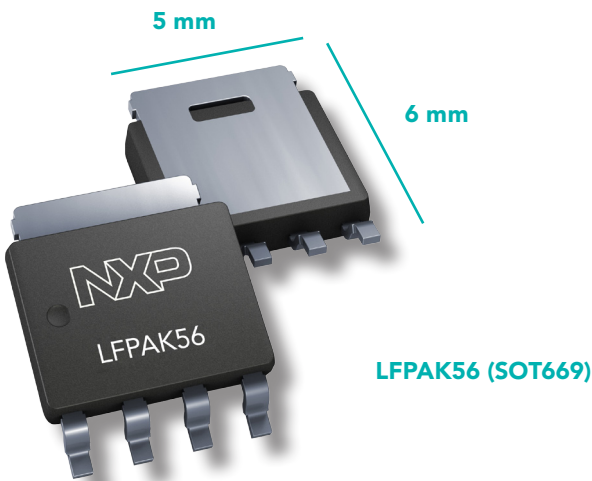
External pass transistor, linear regulator



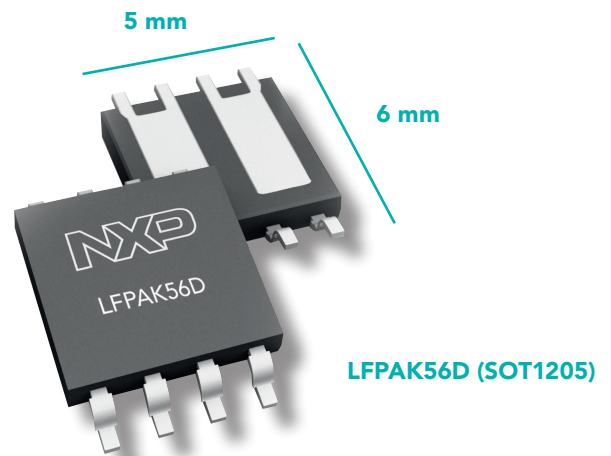
Backlight unit (PHPT61002NYC/PYC)



PACKAGE DETAILS




All package information, including outline and soldering footprint is at www.nxp.com/packages/SOT669.html




All package information, including outline and soldering footprint is at www.nxp.com/packages/SOT1205.html

High-power transistors: single


| Package | | | | | | | | | | | | LFPAK Power SO8 (SOT669) |
|------------------|--------------|-----------------|-----------------|----------------|-------------------|---|---|----------------------------|----------------|----------------|----------|---|
| | | | | | | | | | | | |  |
| | | | | | | | | | | | | Size (mm) |
| V_{CE0} (V) | I_C (A) | I_{CM} (A) | h_{FE} typ | @ I_C (A) | @ V_{CE} (V) | R_{CESat} typ. (at) $I_C/I_B = 10$ | V_{CESat} typ (mV); $I_C = 0.5$ A; $I_B = 0.05$ A | V_{CESat} max (mV) | @ I_C (A) | @ I_B (A) | Polarity | |
| 60 | 3 | 8 | 200 / 400 | 0.5 | 2 | 60 | 50 | 270 | 3 | 0.3 | NPN | PHPT60603NY |
| | | | 200 / 400 | 0.5 | 2 | 80 | 70 | 360 | 3 | 0.3 | PNP | PHPT60603PY |
| 100 | 3 | 8 | 150 / 250 | 0.5 | 10 | 75 | 50 | 330 | 3 | 0.3 | NPN | PHPT61003NY |
| | | | 150 / 250 | 0.5 | 10 | 110 | 70 | 360 | 2 | 0.2 | NPN | PHPT61003PY |
| | 2 | 6 | 150 / 250 | 0.5 | 10 | 80 | 50 | 300 | 2 | 0.2 | NPN | PHPT61002NYC |
| | | | 150 / 250 | 0.5 | 10 | 125 | 70 | 400 | 2 | 0.2 | PNP | PHPT61002PYC |

High-power transistors: double*

| Package | | | | | | | | | | | | LFPAK56D Power SO8 (SOT1205) | |
|------------------|--------------|-----------------|-----------------|----------------|-------------------|---|---|----------------------------|----------------|----------------|----------|---|---------------|
| | | | | | | | | | | | |  | |
| | | | | | | | | | | | | Size (mm) | 5 x 6 x 1 |
| V_{CE0} (V) | I_C (A) | I_{CM} (A) | h_{FE} typ | @ I_C (A) | @ V_{CE} (V) | R_{CESat} typ. (at) $I_C/I_B = 10$ | V_{CESat} typ (mV); $I_C = 0.5$ A; $I_B = 0.05$ A | V_{CESat} max (mV) | @ I_C (A) | @ I_B (A) | Polarity | h_{FE} matching | |
| 100 | 3 | 8 | 150/250 | 0.5 | 10 | 75 | 50 | 330 | 3 | 0.3 | 2xNPN | - | PHPT610030NK |
| 100 | 3 | 8 | 150/250 | 0.5 | 10 | 75 | 50 | 330 | 3 | 0.3 | 2xNPN | 0.95 | PHPT610035NK |
| 100 | 3 | 8 | 150/220 | 0.5 | 10 | 110 | 70 | 360 | 2 | 0.2 | 2xPNP | - | PHPT610030PK |
| 100 | 3 | 8 | 150/220 | 0.5 | 10 | 110 | 70 | 360 | 2 | 0.2 | 2xPNP | 0.95 | PHPT610035PK |
| 100 | 3 | 8 | NPN: 150/250 | 0.5 | 10 | NPN: 75 | 50 | 330 | 3 | 0.3 | NPN/PNP | - | PHPT610030NPK |
| | | | PNP: 150/220 | | | PNP: 110 | 70 | 360 | 2 | 0.2 | | | |

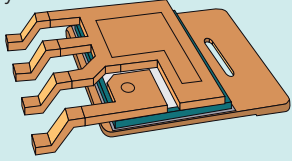

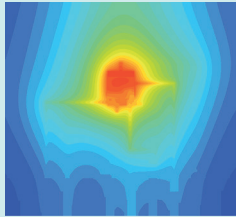
* Release in Q2 2014

High-current, high-power transistors*

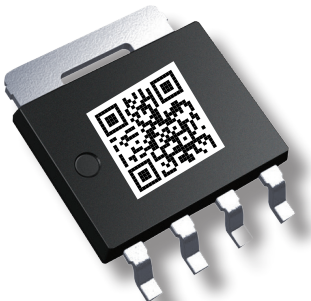
| Package | | | | | | | LFPAK Power SO8 (SOT669) |
|------------------|--------------|-----------------|----------------|-------------------|----------|-------------|---|
| | | | | | | |  |
| | | | | | | | Size (mm) |
| V_{CE0} (V) | I_C (A) | h_{FE} typ | @ I_C (A) | @ V_{CE} (V) | Polarity | | |
| 40 | 6 | 200/400 | 0.5 | 2 | NPN | PHPT60406NY | |
| 40 | 6 | 200/400 | 0.5 | 2 | PNP | PHPT60406PY | |
| 40 | 10 | 200/400 | 0.5 | 2 | NPN | PHPT60410NY | |
| 40 | 10 | 200/400 | 0.5 | 2 | PNP | PHPT60410PY | |
| 40 | 15 | 200/400 | 0.5 | 2 | NPN | PHPT60415NY | |
| 40 | 15 | 200/400 | 0.5 | 2 | PNP | PHPT60415PY | |
| 60 | 6 | 200/400 | 0.5 | 2 | NPN | PHPT60606NY | |
| 60 | 6 | 150/250 | 0.5 | 2 | PNP | PHPT60606PY | |
| 60 | 10 | 200/400 | 0.5 | 2 | NPN | PHPT60610NY | |
| 60 | 10 | 150/250 | 0.5 | 2 | PNP | PHPT60610PY | |
| 100 | 6 | 150/250 | 0.5 | 10 | NPN | PHPT61006NY | |
| 100 | 6 | 150/220 | 0.5 | 10 | PNP | PHPT61006PY | |
| 100 | 10 | 150/250 | 0.5 | 10 | NPN | PHPT61010NY | |
| 100 | 10 | 150/220 | 0.5 | 10 | PNP | PHPT61010PY | |

* Release in Q4 2014

LFFPAK56 vs. DPAK

| Parameter | LFFPAK56 | DPAK |
|--|---|---|
| Reliability / mechanical ruggedness | Designed for reliability: solid copper clip, wire-free  | Wire bonding prone to breakage  |
| Outline | 5 x 6 mm ² | 10 x 7 mm ² |
| Height | 1 mm | 2.3 mm |
| Occupied area on PCB | 30 mm ² | 70 mm ² |
| Max. temperature of complete portfolio | 175 °C Image shows result from thermal simulation  | 150 °C |

AVAILABLE RESOURCES



- ▶ Portfolio overview with parametric search
- ▶ Datasheets and supporting documentation
- ▶ Spice models / application notes / thermal design guides
- ▶ Order products online (via distribution partners)

Product Series Page

www.nxp.com/group/12466