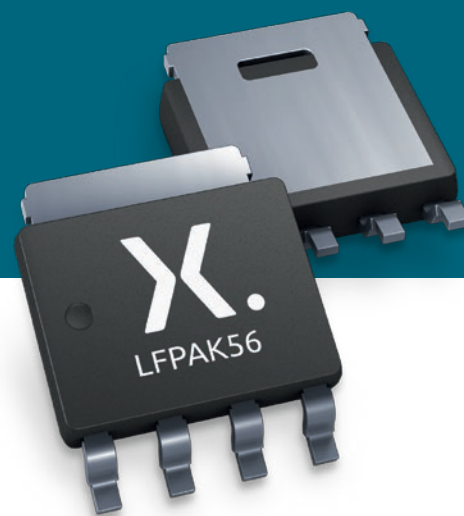


Full power in half the footprint

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).

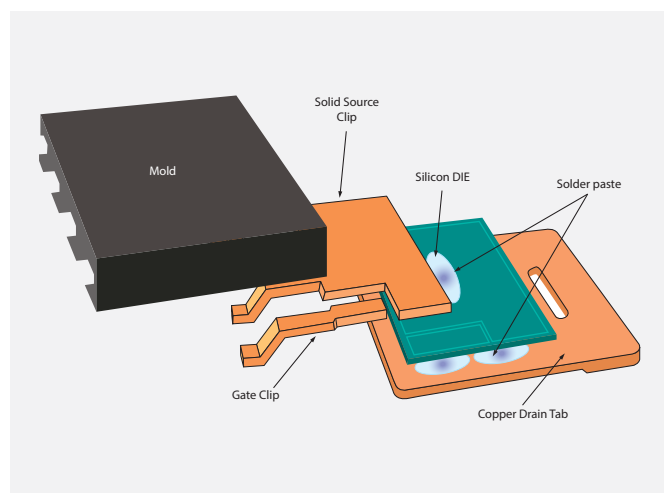
Features and benefits

- › 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
- › AEC-Q101 qualified
- › Future-proof, growing portfolio

Applications

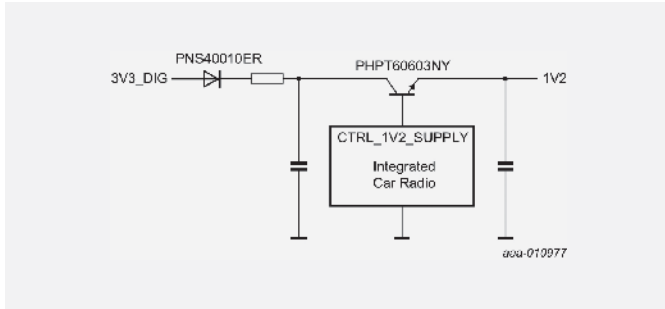
- › Power management
- › Motor drives
- › Loadswitches
- › Linear mode voltage regulators
- › LED backlighting applications
- › LED lighting
- › Relay replacement

Cutaway view of LFPAK56

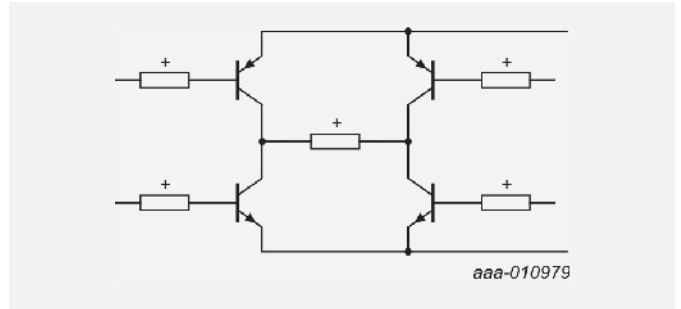


Application examples

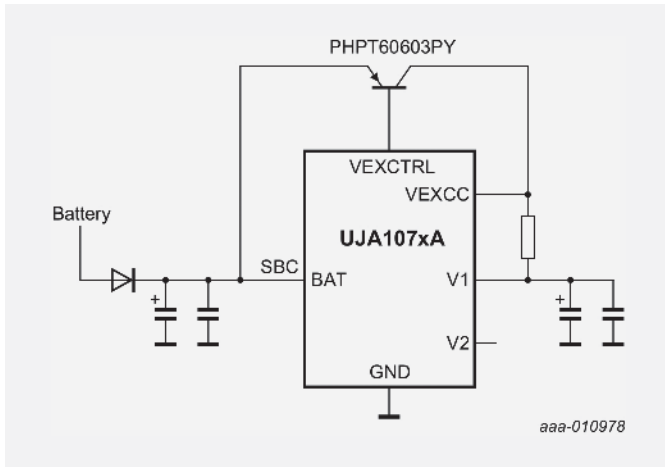
Car radio (PHPT60603NY) External pass transistor, linear regulator



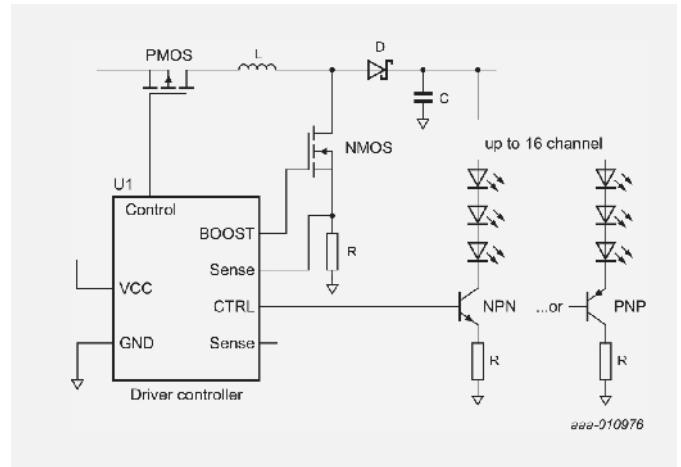
Motor drive (2x PHPT60603NY/PY) or a double LPAK56D (PHPT610030NK/PK)



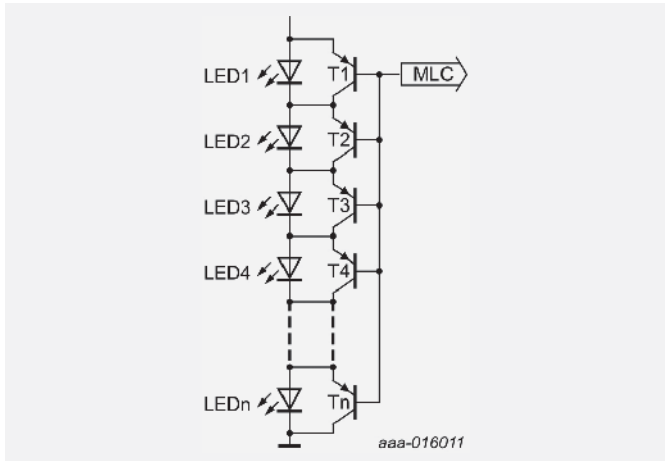
IVN – System Basis Chip (PHPT60603PY) External pass transistor, linear regulator



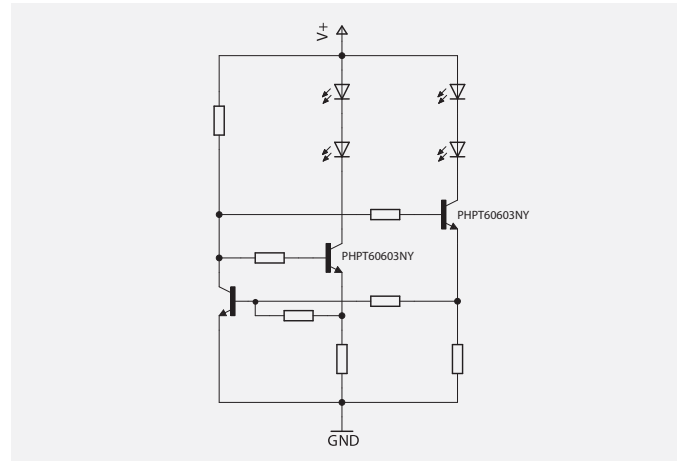
Backlight unit (PHPT61002NYC/PYC)




Dimming transistor in matrix headlamp (PHPT60603PY)




Daytime running light (PHPT60603NY)




High power transistors: single

| Package | | | | | | | | | | | | | LFPAK56 Power SO8 (SOT669) |
|---------------|-----------|--------------|--------------|-------------|----------------|------------------------------------|---|----------------------|-------------|-------------|----------|--------------|---|
| | | | | | | | | | | | | |  |
| 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 | | |
| 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 | |

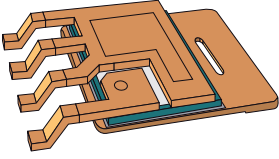

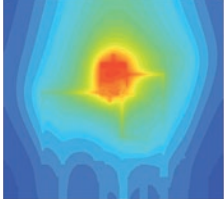
High power transistors: double

| 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 | |
| | | | 150/250 | 0.5 | 10 | 75 | 50 | 330 | 3 | 0.3 | 2xNPN | 0.95 | PHPT610035NK | |
| | | | 150/220 | 0.5 | 10 | 110 | 70 | 360 | 2 | 0.2 | 2xPNP | - | PHPT610030PK | |
| | | | 150/220 | 0.5 | 10 | 110 | 70 | 360 | 2 | 0.2 | 2xPNP | 0.95 | PHPT610035PK | |
| | | | 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 | | | |

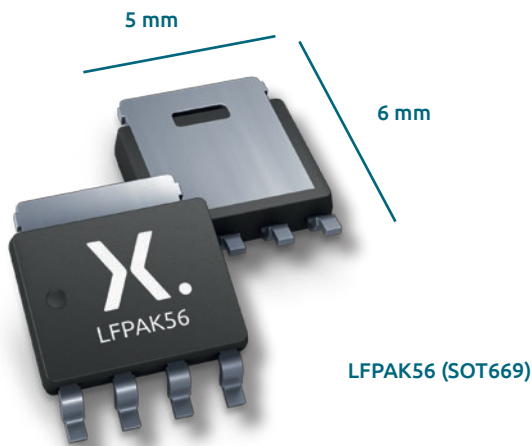
High-current, high power transistors

| Package | | | | | | | LFPAK56 Power SO8 (SOT669) |
|---------------|-----------|------------------|-------------|----------------|----------|-------------|---|
| | | | | | | |  |
| Size (mm) | | | | | | | 5 x 6 x 1 |
| V_{CE0} (V) | I_C (A) | h_{FE} typ/max | @ I_C (A) | @ V_{CE} (V) | Polarity | | |
| 40 | 6 | 230/350 | 0.5 | 2 | NPN | PHPT60406NY | |
| | | 210/300 | 0.5 | 2 | PNP | PHPT60406PY | |
| | 10 | 230/370 | 0.5 | 2 | NPN | PHPT60410NY | |
| | | 240/350 | 0.5 | 2 | PNP | PHPT60410PY | |
| | 15 | 250/410 | 0.5 | 2 | NPN | PHPT60415NY | |
| | | 200/340 | 0.5 | 2 | PNP | PHPT60415PY | |
| 60 | 6 | 240/390 | 0.5 | 2 | NPN | PHPT60606NY | |
| | | 120/200 | 0.5 | 2 | PNP | PHPT60606PY | |
| | 10 | 210/410 | 0.5 | 2 | NPN | PHPT60610NY | |
| | | 120/215 | 0.5 | 2 | PNP | PHPT60610PY | |
| 100 | 6 | 140/260 | 0.5 | 2 | NPN | PHPT61006NY | |
| | | 170/305 | 0.5 | 2 | PNP | PHPT61006PY | |
| | 10 | 150/275 | 0.5 | 2 | NPN | PHPT61010NY | |
| | | 180/330 | 0.5 | 2 | PNP | PHPT61010PY | |

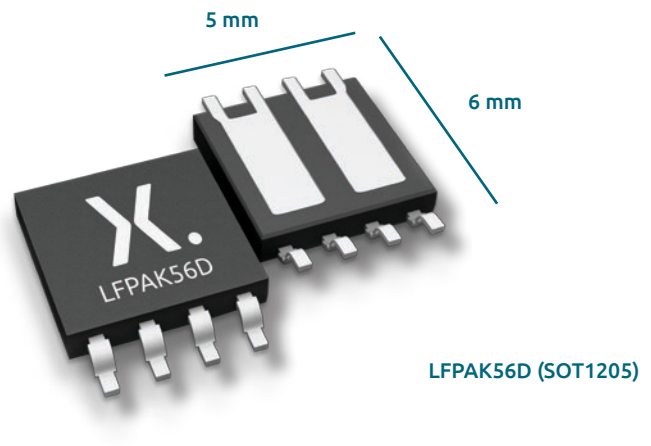
LFPAK56 - DPAK comparison

| Parameter | LFPAK56 | 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 |

Package details



All package information, including outline and soldering footprint at assets.nexperia.com/documents/outline-drawing/SOT669.pdf



All package information, including outline and soldering footprint at assets.nexperia.com/documents/outline-drawing/SOT1205.pdf



Product Series Page

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