



Bipolars in Super-Small-Size DFN1006 Package Save Space

Diodes Incorporated has extended its family of small-signal Bipolar transistors in the tiny DFN package, measuring only 1 x 0.6mm, yet delivering the same electrical performance as equivalent devices in much larger packages.

These NPN and PNP Bipolar transistors are targeted at load and signal switching applications in smart phones and other portable applications that have extreme constraints for designers in terms of PCB area where space is at a premium.

Offering 10x higher power density, these transistors in the DFN1006 package have a 0.6mm² footprint – 13 times smaller than SOT23 package – and an off-board height of only 0.4mm, which is even lower than the industry standard. In addition to being significantly smaller than the equivalent leaded packages, such as SOT323, SOT523 and SOT723, these transistors also offer superior thermal performance.



The Diodes' Advantage

NPN and PNP small-signal Bipolar transistors in the tiny DFN1006 package.

- **Higher power density**
DFN1006 leadless package is thermally efficient with 29% lower thermal resistance than the an equivalent SOT23 whilst occupying 13 times less footprint. This overall enables much greater power densities to be achieved.
- **0.6mm² footprint and 0.4mm off-board height**
Small form factor allows designer's to reduce PCB area whilst delivering better performance than equivalent transistors in much larger packages.
- **Leadless package**
Leadless packages reduce the electrical and thermal path length which can increase performance, whilst less space is occupied on the PCB.
- **1A peak current**
Handling peak currents up to 1A for load switching applications.
- **Low on-resistance**
Low equivalent on-resistance of typical < 300mΩ in a tiny package.
- **AEC-Q101, "Green" and RoHS Compliant**
Qualified to AEC-Q101 standard, are RoHS compliant and have insignificant levels of halogens or antimony compounds

Target Markets

Load and signal switching applications in portable applications such as:

- Smart phones
- Digital cameras
- Bluetooth Headsets
- Tablet PC
- Portable Multimedia Players



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Bipolar Transistors in Products

Part Name	Polarity	V _{CEO} V	I _C A	I _{CM} A	P _D W	h _{FE}		V _{CE(SAT)}		Package Height (mm)
						Min.	@ I _C A	Max. mV	@ I _C / I _B A/mA	
DSS2515M	NPN	15	0.5	1.0	0.25	200	0.01	25	0.01/0.5	0.6
DSS3515M	PNP	-15	-0.5	-1.0	0.25	200	-0.01	-25	-0.01/-0.5	0.6
DSS2540M	NPN	40	0.5	1.0	0.25	200	0.01	50	0.01/0.5	0.6
DSS3540M	PNP	-40	-0.5	-1.0	0.25	200	-0.01	-50	-0.01/-0.5	0.6
DN0150ALP4	NPN	50	0.1	0.2	0.45	120	0.002	250	0.1/10	0.4
DP0150ALP4	PNP	-50	-0.1	-0.2	0.45	120	-0.002	-300	-0.1/-10	0.4
DN0150BLP4	NPN	50	0.1	0.2	0.45	200	0.002	250	0.1/10	0.4
DP0150BLP4	PNP	-50	-0.1	-0.2	0.45	200	-0.002	-300	-0.1/-10	0.4
2DC4617QLP	NPN	50	0.1	0.2	0.25	120	0.001	200	0.05/5	0.6
2DA1774QLP	PNP	-40	-0.1	-0.2	0.25	120	-0.001	-200	-0.05/-5	0.6
BC847BLP4 BC847BLP	NPN	45	0.1	0.1	0.25	200	0.002	250	0.01/0.5	0.4 0.6
BC857BLP4 BC857BLP	PNP	-45	-0.1	-0.1	0.25	220	-0.002	-300	-0.01/-0.5	0.4 0.6
MMBT3904LP	NPN	40	0.2	0.2	0.25	100	0.01	250	0.01/1	0.6
MMBT3906LP	PNP	-40	-0.2	-0.2	0.25	100	-0.01	-250	-0.01/-1	0.6

Cross Reference

Part Name	Central Semi (SOT-883L)	Infineon (TSLP-3-1)	NXP (SOT883)	Toshiba (CST3)
DSS2515M	-	-	PBSS2515M	2SC5376CT
DSS3515M	-	-	PBSS3515M	2SA1955CT
DSS2540M	-	-	PBSS2540M	-
DSS3540M	-	-	PBSS3540M	-
DN0150ALP4	-	-	-	2SC6026CT
DP0150ALP4	-	-	-	2SA2154CT
BC847BLP4 BC847BLP	-	BC847BL3	-	-
BC857BLP4 BC857BLP	-	BC857BL3	-	-
MMBT3904LP	CET3904E	-	-	-
MMBT3906LP	CET3906E	-	-	-