

DATA SHEET

EFD15/8/5

EFD cores and accessories

Supersedes data of September 2004

2008 Sep 01

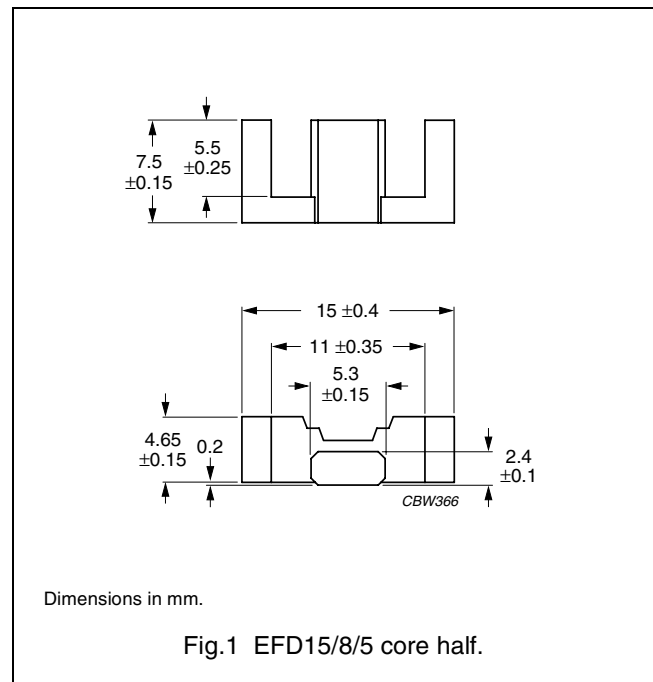


FERROXCUBE
A YAGEO COMPANY

CORES

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	2.27	mm ⁻¹
V_e	effective volume	510	mm ³
l_e	effective length	34.0	mm
A_e	effective area	15.0	mm ²
A_{min}	minimum area	12.2	mm ²
m	mass of core half	≈ 1.4	g



Core sets

Clamping force for A_L measurements, 20 ± 5 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3C90	63 ± 5%	≈ 115	≈ 400	EFD15/8/5-3C90-A63-S
	100 ± 8%	≈ 180	≈ 220	EFD15/8/5-3C90-A100-S
	160 ± 10%	≈ 290	≈ 120	EFD15/8/5-3C90-A160-S
	950 ± 25%	≈ 1700	≈ 0	EFD15/8/5-3C90-S
3C94	63 ± 5%	≈ 115	≈ 400	EFD15/8/5-3C94-A63-S
	100 ± 8%	≈ 180	≈ 220	EFD15/8/5-3C94-A100-S
	160 ± 10%	≈ 290	≈ 120	EFD15/8/5-3C94-A160-S
	950 ± 25%	≈ 1700	≈ 0	EFD15/8/5-3C94-S
3C95 <small>des</small>	1140 ± 25%	≈ 2070	≈ 0	EFD15/8/5-3C95-S
3C96 <small>des</small>	850 ± 25%	≈ 1520	≈ 0	EFD15/8/5-3C96-S
3F3	63 ± 5%	≈ 115	≈ 400	EFD15/8/5-3F3-A63-S
	100 ± 8%	≈ 180	≈ 220	EFD15/8/5-3F3-A100-S
	160 ± 10%	≈ 290	≈ 120	EFD15/8/5-3F3-A160-S
	780 ± 25%	≈ 1400	≈ 0	EFD15/8/5-3F3-S
3F35 <small>des</small>	630 ± 25%	≈ 1130	≈ 0	EFD15/8/5-3F35-S
3F4 <small>des</small>	63 ± 5%	≈ 115	≈ 360	EFD15/8/5-3F4-A63-S
	100 ± 8%	≈ 180	≈ 190	EFD15/8/5-3F4-A100-S
	160 ± 10%	≈ 290	≈ 90	EFD15/8/5-3F4-A160-S
	400 ± 25%	≈ 720	≈ 0	EFD15/8/5-3F4-S
3F45 <small>prot</small>	400 ± 25%	≈ 720	≈ 0	EFD15/8/5-3F45-S

Properties of core sets under power conditions

GRADE	B (mT) at	CORE LOSS (W) at				
	H = 250 A/m; f = 25 kHz; T = 100 °C	f = 100 kHz; \hat{B} = 100 mT; T = 100 °C	f = 100 kHz; \hat{B} = 200 mT; T = 25 °C	f = 100 kHz; \hat{B} = 200 mT; T = 100 °C	f = 400 kHz; \hat{B} = 50 mT; T = 100 °C	f = 500 kHz; \hat{B} = 50 mT; T = 100 °C
3C90	≥320	≤ 0.057	–	–	–	–
3C94	≥320	≤ 0.045	–	≤ 0.28	–	–
3C95	≥320	–	≤ 0.28	≤ 0.27	–	–
3C96	≥340	≤ 0.035	–	≤ 0.22	≤ 0.09	≤ 0.19
3F35	≥300	–	–	–	≤ 0.05	≤ 0.06
3F3	≥315	≤ 0.06	–	–	≤ 0.1	–
3F4	≥250	–	–	–	–	–

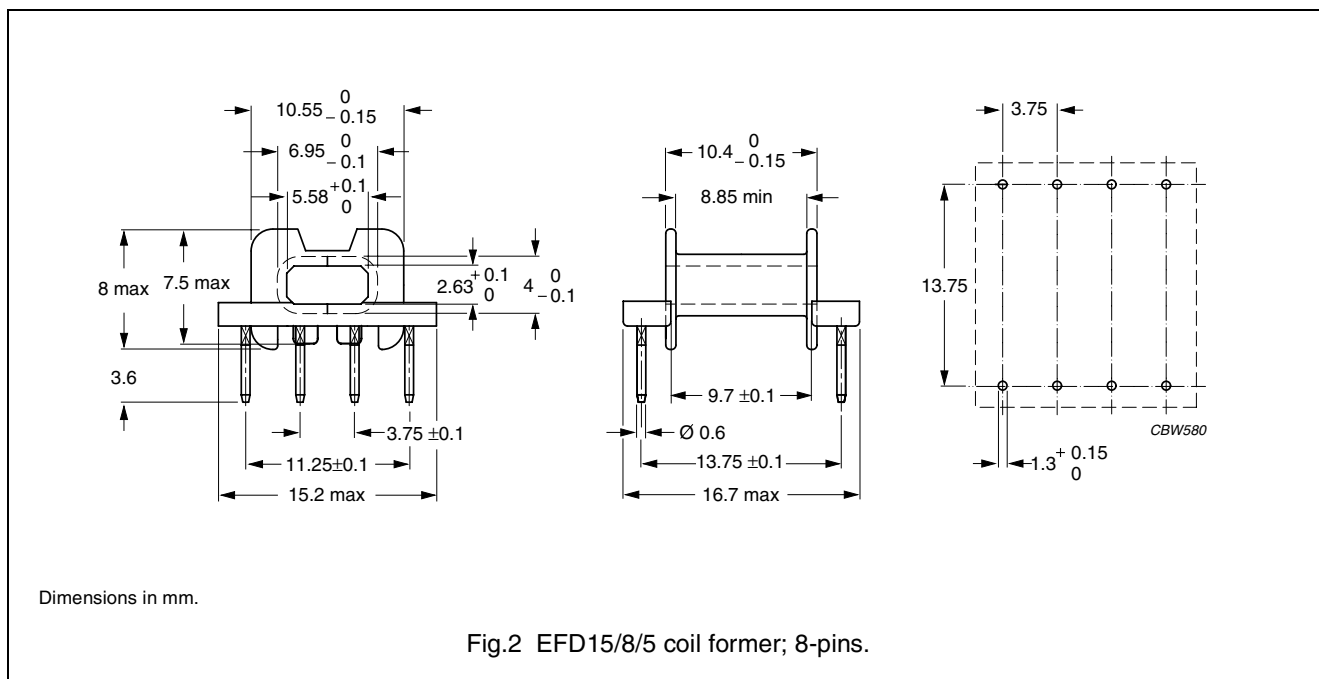
Properties of core sets under power conditions (continued)

GRADE	B (mT) at	CORE LOSS (W) at			
	H = 250 A/m; f = 25 kHz; T = 100 °C	f = 500 kHz; \hat{B} = 100 mT; T = 100 °C	f = 1 MHz; \hat{B} = 30 mT; T = 100 °C	f = 1 MHz; \hat{B} = 50 mT; T = 100 °C	f = 3 MHz; \hat{B} = 10 mT; T = 100 °C
3C90	≥320	–	–	–	–
3C94	≥320	–	–	–	–
3C95	≥320	–	–	–	–
3C96	≥340	–	–	–	–
3F35	≥300	≤ 0.5	–	–	–
3F3	≥315	–	–	–	–
3F4	≥250	–	≤ 0.15	–	≤ 0.24
3F45	≥250	–	≤ 0.12	≤ 0.45	≤ 0.2

COIL FORMERS

General data

PARAMETER	SPECIFICATION
Coil former material	phenolformaldehyde (PF), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E167521(M)
Pin material	copper-tin alloy (CuSn), Ni flash, tin (Sn) plated, see note 1
Maximum operating temperature	180 °C, "IEC 60085", class H
Resistance to soldering heat	"IEC 60068-2-20", Part 2, Test Tb, method 1B, 350 °C, 3.5 s
Solderability	"IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s



Winding data and area product for EFD15/8/5 coil former with 8-pins

NUMBER OF SECTIONS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	14.8	8.85	26.3	222	CSH-EFD15-1S-8P ⁽¹⁾

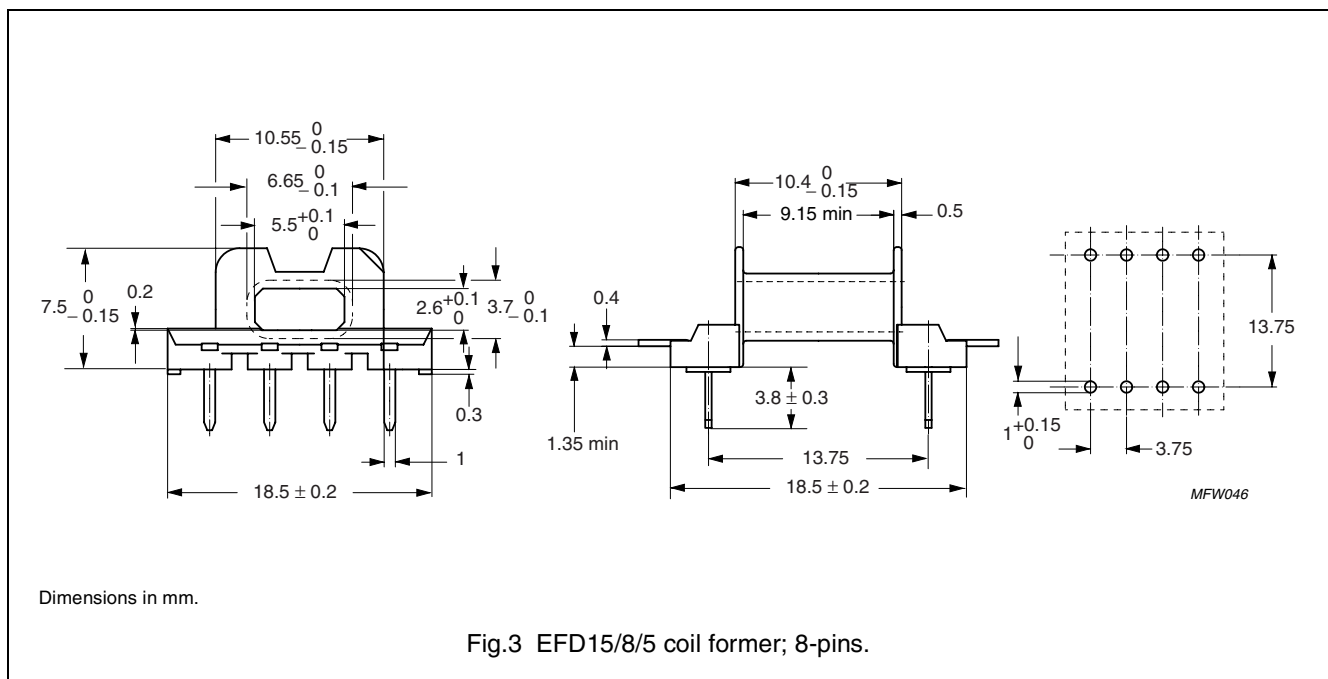
Note

1. Also available with post-inserted pins.

COIL FORMERS

General data

PARAMETER	SPECIFICATION
Coil former material	liquid crystal polymer (LCP), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E54705(M)
Pin material	copper-tin alloy (CuSn), nickel flash, tin (Sn) plated
Maximum operating temperature	155 °C, "IEC 60085", class F
Resistance to soldering heat	"IEC 60068-2-20", Part 2, Test Tb, method 1B, 350 °C, 3.5 s
Solderability	"IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s



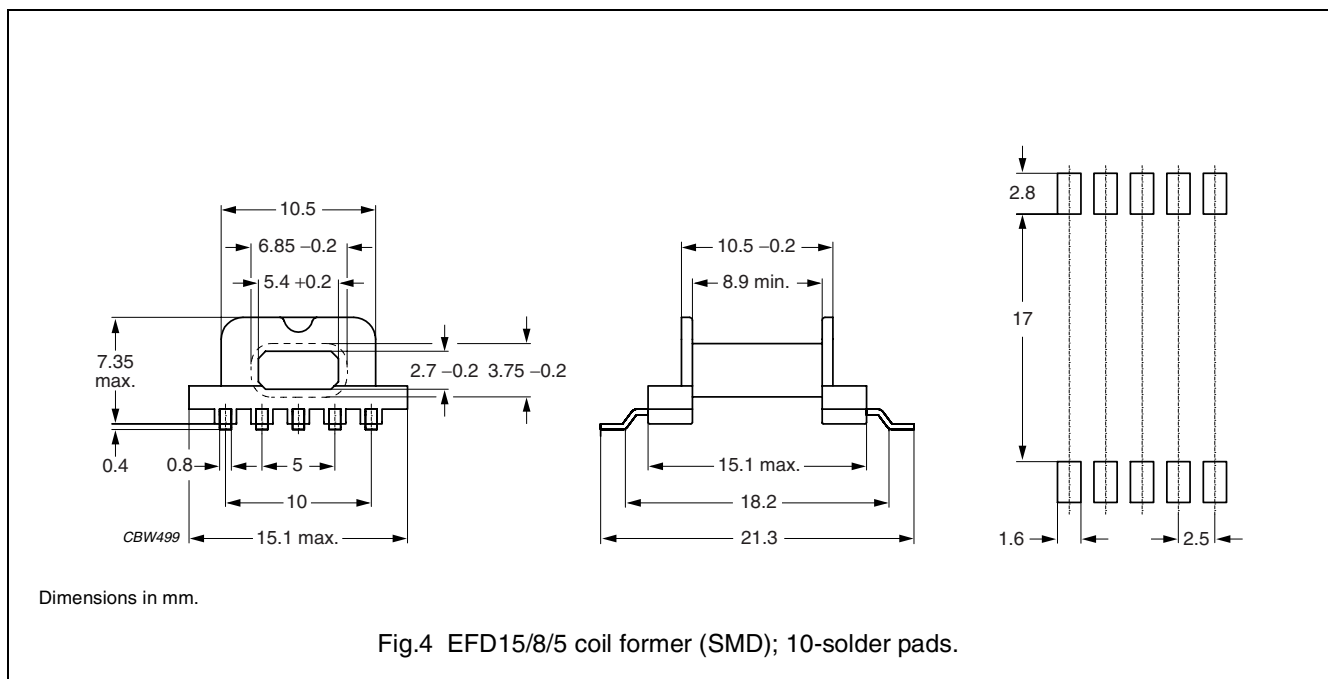
Winding data and area product for EFD15/8/5 coil former (PCB) with 8-pins

NUMBER OF SECTIONS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	16.7	9.15	25.6	251	CPH-EFD15-1S-8PD-Z

COIL FORMERS

General data

PARAMETER	SPECIFICATION
Coil former material	liquid crystal polymer (LCP), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E54705 (M)
Solder pad material	copper-tin alloy (CuSn), tin (Sn) plated
Maximum operating temperature	155 °C, "IEC 60085", class F
Resistance to soldering heat	"IEC 60068-2-20", Part 2, Test Tb, method 1B, 350 °C, 3.5 s
Solderability	"IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s



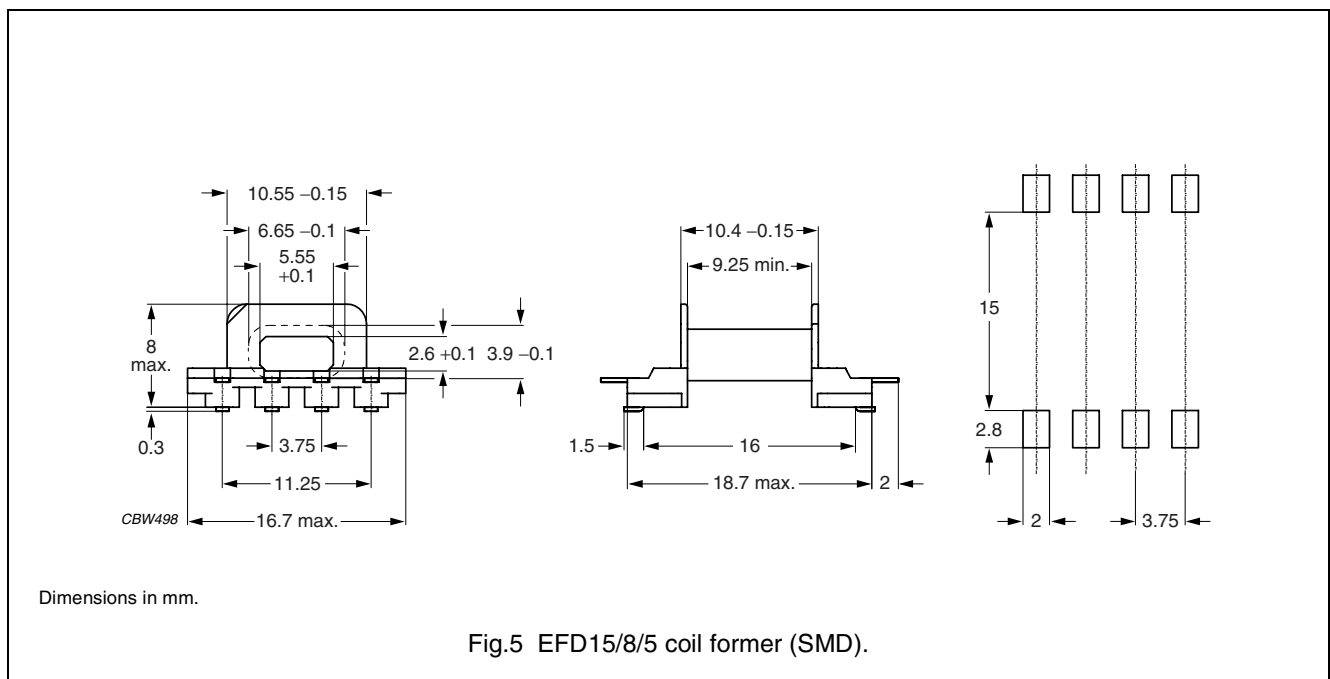
Winding data and area product for EFD15/8/5 coil former (SMD)

NUMBER OF SECTIONS	NUMBER OF SOLDER PADS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	10	16.0	8.9	26	240	CPHS-EFD15-1S-10P

COIL FORMERS

General data

PARAMETER	SPECIFICATION
Coil former material	phenolformaldehyde (PF), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E41429 (M)
Pin material	copper-tin alloy (CuSn), tin (Sn) plated
Maximum operating temperature	180 °C, "IEC 60085", class H
Resistance to soldering heat	"IEC 60068-2-20", Part 2, Test Tb, method 1B, 350 °C, 3.5 s
Solderability	"IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s



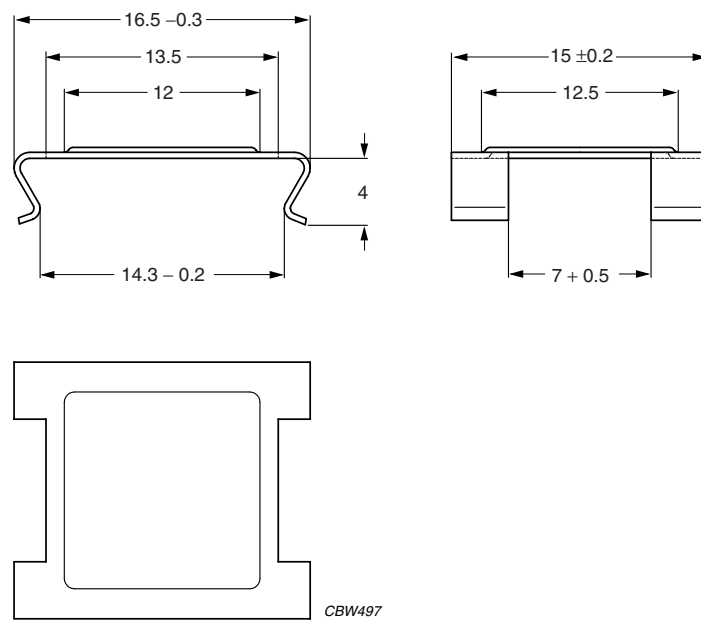
Winding data and area product for EFD15/8/5 (SMD) coil former

NUMBER OF SECTIONS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	16.7	9.25	24.1	251	CSHS-EFD15-1S-8P-Z

MOUNTING PARTS

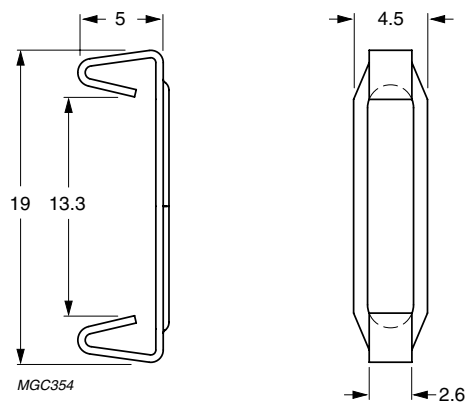
General data

ITEM	REMARKS	FIGURE	TYPE NUMBER
Clamp	stainless steel (CrNi); clamping force ≈ 25 N	6	CLM-EFD15
Clip	stainless steel (CrNi); clamping force ≈ 12.5 N	7	CLI-EFD15



Dimensions in mm.

Fig.6 Clamp: CLM-EFD15.



Dimensions in mm.

Fig.7 Clip: CLI-EFD15.




DATA SHEET STATUS DEFINITIONS

DATA SHEET STATUS	PRODUCT STATUS	DEFINITIONS
Preliminary specification	Development	This data sheet contains preliminary data. Ferroxcube reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.
Product specification	Production	This data sheet contains final specifications. Ferroxcube reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.

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PRODUCT STATUS DEFINITIONS

STATUS	INDICATION	DEFINITION
Prototype		These are products that have been made as development samples for the purposes of technical evaluation only. The data for these types is provisional and is subject to change.
Design-in		These products are recommended for new designs.
Preferred		These products are recommended for use in current designs and are available via our sales channels.
Support		These products are not recommended for new designs and may not be available through all of our sales channels. Customers are advised to check for availability.