

Material Declaration Form

Page 1

ams-OSRAM AG
 Tobelbader Strasse 30
 A-8141 Premstaetten, Austria
 Tel +43 (0) 3136 500-0



Ordering Code	Production Version	Package Family	Assembly Material Number	Lead Count	Weight (mg)	Manufacturing Country	Halogen Free	EU RoHS	China Rohs	Release Status	Report Version
TMF8828-1AM	TE21	OLGA	510840034	12	18.27	Taiwan	YES	YES	YES	FULL	1

Production Version: TE21

Homogenous Material	Weight (mg)	Symbol	Chemical Substance	Input Ratio (%)	CAS Number	Unit Weight (mg)	Unit Weight (%)	Amount (ppm)
Substrate	2.92	Au	Gold	0.50	7440-57-5	0.01460	0.07991	799
		Cu	Copper	55.00	7440-50-8	1.60600	8.79037	87904
		Ni	Nickel	2.00	7440-02-0	0.05840	0.31965	3196
			Bismaleimide Triazine	3.50	35325-39-4	0.10220	0.55939	5594
			Filament Fiber Glass	25.00	65997-17-3	0.73000	3.99562	39956
			Inorganic Filler	14.00	21645-51-2	0.40880	2.23755	22375
Subtotal:				100.00		2.92000	15.98248	159825
Substrate (Solder Mask)	0.35	BaO4S	Barium Sulfate	75.00	7727-43-7	0.26250	1.43678	14368
		SiO2	Silica	1.00	7631-86-9	0.00350	0.01916	192
			Carbon Black	1.00	1333-86-4	0.00350	0.01916	192
			Dipropylene glycol monomethyl ether	18.00	34590-94-8	0.06300	0.34483	3448
			Talc	5.00	14807-96-6	0.01750	0.09579	958
Subtotal:				100.00		0.35000	1.91571	19157

The information provided in this statement represents our knowledge and belief as of the date that it is provided. We base our knowledge and belief on information provided by third parties and make no representation or warranty as to the accuracy and shall have no liability for the consequences of use of such information. We have taken and continue to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. We and our suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

Material Declaration Form

Page 2

ams-OSRAM AG
 Tobelbader Strasse 30
 A-8141 Premstaetten, Austria
 Tel +43 (0) 3136 500-0



Ordering Code	Production Version	Package Family	Assembly Material Number	Lead Count	Weight (mg)	Manufacturing Country	Halogen Free	EU RoHS	China Rohs	Release Status	Report Version
TMF8828-1AM	TE21	OLGA	510840034	12	18.27	Taiwan	YES	YES	YES	FULL	1

Production Version: TE21

Homogenous Material	Weight (mg)	Symbol	Chemical Substance	Input Ratio (%)	CAS Number	Unit Weight (mg)	Unit Weight (%)	Amount (ppm)
DAF	0.12	C15H16O2	Epoxy Resin	92.00	25068-38-6	0.11040	0.60427	6043
			4,4'-Diaminodiphenylsulfone	2.00	80-08-0	0.00240	0.01314	131
			Silica Dioxide	6.00	67762-90-7	0.00720	0.03941	394
Subtotal:				100.00		0.12000	0.65681	6568
IC	1.55	Si	Silicon	100.00	7440-21-3	1.55000	8.48385	84839
Subtotal:				100.00		1.55000	8.48385	84839
Adhesive (VCSEL)	0.01	Ag	Silver	80.00	7440-22-4	0.00800	0.04379	438
			Epoxy resin	20.00	24969-06-0	0.00200	0.01095	109
Subtotal:				100.00		0.01000	0.05473	547
VCSEL	0.01	GaAs	Gallium arsenide	100.00	1303-00-0	0.01000	0.05473	547
Subtotal:				100.00		0.01000	0.05473	547

The information provided in this statement represents our knowledge and belief as of the date that it is provided. We base our knowledge and belief on information provided by third parties and make no representation or warranty as to the accuracy and shall have no liability for the consequences of use of such information. We have taken and continue to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. We and our suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

Material Declaration Form

Page 3

ams-OSRAM AG
Tobelbader Strasse 30
A-8141 Premstaetten, Austria
Tel +43 (0) 3136 500-0



Ordering Code	Production Version	Package Family	Assembly Material Number	Lead Count	Weight (mg)	Manufacturing Country	Halogen Free	EU RoHS	China Rohs	Release Status	Report Version
TMF8828-1AM	TE21	OLGA	510840034	12	18.27	Taiwan	YES	YES	YES	FULL	1

Production Version: TE21

Homogenous Material	Weight (mg)	Symbol	Chemical Substance	Input Ratio (%)	CAS Number	Unit Weight (mg)	Unit Weight (%)	Amount (ppm)
Adhesive (MLA)	0.02	C12H22O3	Oxetane, 3,3'-[oxybis(methylene)]bis[3-ethyl-	6.71	18934-00-4	0.00134	0.00735	74
		C13H18O2	P-tert-Butylphenyl 1-(2,3-epoxy)propyl ether	2.50	3101-60-8	0.00050	0.00274	27
		C14H20O4	Cycloaliphatic epoxy resin	6.71	2386-87-0	0.00134	0.00735	74
		C15H16O2	Bisphenol A diglycidyl ether resin	80.57	25068-38-6	0.01611	0.08820	882
		C9H20O5Si	3-Glycidoxypropyltrimethoxysilane	2.50	2530-83-8	0.00050	0.00274	27
			Hydroxy-, C9-11-alkyl ethers	1.00	709014-50-6	0.00020	0.00109	11
Subtotal:				100.00		0.02000	0.10947	1095
Glass (MLA)	1.59		Inorganic Glass	100.00	65997-17-3	1.59000	8.70279	87028
		Subtotal:				100.00	1.59000	8.70279
Wire	0.07	Au	Gold	100.00	7440-57-5	0.07000	0.38314	3831
		Subtotal:				100.00	0.07000	0.38314

The information provided in this statement represents our knowledge and belief as of the date that it is provided. We base our knowledge and belief on information provided by third parties and make no representation or warranty as to the accuracy and shall have no liability for the consequences of use of such information. We have taken and continue to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. We and our suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

Material Declaration Form

Page 4

ams-OSRAM AG
 Tobelbader Strasse 30
 A-8141 Premstaetten, Austria
 Tel +43 (0) 3136 500-0



Ordering Code	Production Version	Package Family	Assembly Material Number	Lead Count	Weight (mg)	Manufacturing Country	Halogen Free	EU RoHS	China Rohs	Release Status	Report Version
TMF8828-1AM	TE21	OLGA	510840034	12	18.27	Taiwan	YES	YES	YES	FULL	1

Production Version: TE21

Homogenous Material	Weight (mg)	Symbol	Chemical Substance	Input Ratio (%)	CAS Number	Unit Weight (mg)	Unit Weight (%)	Amount (ppm)
Moldcompound	2.19	C15H16O2	Epoxy Resin	99.00	25068-38-6	2.16810	11.86700	118670
			2,6-Ditert.butyl-4-Methyl	1.00	128-37-0	0.02190	0.11987	1199
Subtotal:				100.00		2.19000	11.98686	119869
Adhesive (Lid Attach)	0.96	SiO2	Silica	20.00	7631-86-9	0.19200	1.05090	10509
			Silicon Dioxide	3.00	7631-86-9	0.02880	0.15764	1576
			Carbon Black	1.00	1333-86-4	0.00960	0.05255	525
			Dicyandiamide	16.00	461-58-5	0.15360	0.84072	8407
			Epoxy Resin	50.00	25085-99-8	0.48000	2.62726	26273
			Epoxy resin 2	10.00	2095-03-6	0.09600	0.52545	5255
Subtotal:				100.00		0.96000	5.25452	52545
LCP LID	8.18		Carbon Black	5.00	1333-86-4	0.40900	2.23864	22386
			Glass oxide	60.00	65997-17-3	4.90800	26.86371	268637
			Liquid crystal polymers	35.00	147310-94-9	2.86300	15.67050	156705
Subtotal:				100.00		8.18000	44.77285	447729

The information provided in this statement represents our knowledge and belief as of the date that it is provided. We base our knowledge and belief on information provided by third parties and make no representation or warranty as to the accuracy and shall have no liability for the consequences of use of such information. We have taken and continue to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. We and our suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

Material Declaration Form

ams-OSRAM AG
 Tobelbader Strasse 30
 A-8141 Premstaetten, Austria
 Tel +43 (0) 3136 500-0



Ordering Code	Production Version	Package Family	Assembly Material Number	Lead Count	Weight (mg)	Manufacturing Country	Halogen Free	EU RoHS	China Rohs	Release Status	Report Version
TMF8828-1AM	TE21	OLGA	510840034	12	18.27	Taiwan	YES	YES	YES	FULL	1

Production Version: TE21

Homogenous Material	Weight (mg)	Symbol	Chemical Substance	Input Ratio (%)	CAS Number	Unit Weight (mg)	Unit Weight (%)	Amount (ppm)
Adhesive (Barrier)	0.3	SiO2	Silica	20.00	7631-86-9	0.06000	0.32841	3284
			Carbon Black	1.00	1333-86-4	0.00300	0.01642	164
			Dicyandiamide	16.00	461-58-5	0.04800	0.26273	2627
			Epoxy resin 1	52.50	25085-99-8	0.15750	0.86207	8621
			Epoxy resin 2	9.50	2095-03-6	0.02850	0.15599	1560
			Silicon dioxide	1.00	67762-90-7	0.00300	0.01642	164
Subtotal:				100.00		0.30000	1.64204	16420
Total:	18.27					18.27	100.00000	1000000

The information provided in this statement represents our knowledge and belief as of the date that it is provided. We base our knowledge and belief on information provided by third parties and make no representation or warranty as to the accuracy and shall have no liability for the consequences of use of such information. We have taken and continue to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. We and our suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.