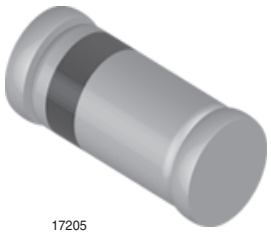
Silicon Epitaxial Planar Zener - Diodes

Features

- Very sharp reverse characteristic
- Low reverse current level
- Very high stability
- Low noise
- High reliability


17205

Applications

Voltage stabilization

Mechanical Data

Case: MiniMELF Glass Case (SOD-80)
Weight: approx. 50 mg

Packaging codes/ options:
GS18/ 10 k per 13" reel (8 mm tape), 10 k/box
GS08/ 2.5 k per 7" reel (8 mm tape), 12.5 k/box

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Power dissipation	$R_{thJA} \leq 300$ K/W	P_{tot}	500	mW
Z-current		I_Z	P_{tot}/V_Z	mA
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	- 65... + 175	°C

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction ambient	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 200 mA	V_F			1.5	V

Electrical Characteristics

Part-number-group	Part-number	Marking Code	Zener Voltage		Dynamic Resistance		Test Current		Reverse Leakage Current	
			V_Z @ I_{ZT}		Z_Z @ I_{ZT}	Z_{ZK} @ I_{ZK}	I_{ZT}	I_{ZK}	I_R	@ V_R
			V	V	Ω	Ω	mA	mA	µA	V
			min	max	max	max			max	
TLZ2V4	TLZ2V4A	2A4	2.33	2.52	100	2000	20	1	70	1
	TLZ2V4B	2B4	2.43	2.63	100	2000	20	1	70	1
TLZ2V7	TLZ2V7A	2A7	2.54	2.75	100	1000	20	1	50	1
	TLZ2V7B	2B7	2.69	2.91	100	1000	20	1	50	1
TLZ3V0	TLZ3V0A	3A0	2.85	3.07	80	1000	20	1	50	1
	TLZ3V0B	3B0	3.01	3.22	80	1000	20	1	10	1
TLZ3V3	TLZ3V3A	3A3	3.16	3.38	70	1000	20	1	10	1
	TLZ3V3B	3B3	3.32	3.53	70	1000	20	1	10	1
TLZ3V6	TLZ3V6A	3A6	3.455	3.695	60	1000	20	1	5	1
	TLZ3V6B	3B6	3.6	3.845	60	1000	20	1	5	1
TLZ3V9	TLZ3V9A	3A9	3.74	4.01	50	1000	20	1	3	1
	TLZ3V9B	3B9	3.89	4.16	50	1000	20	1	3	1
TLZ4V3	TLZ4V3A	4A3	4.04	4.29	40	1000	20	1	3	1
	TLZ4V3B	4B3	4.17	4.43	40	1000	20	1	3	1
	TLZ4V3C	4C3	4.3	4.57	40	1000	20	1	3	1
TLZ4V7	TLZ4V7A	4A7	4.44	4.68	25	900	20	1	10	2
	TLZ4V7B	4B7	4.55	4.8	25	900	20	1	6	2
	TLZ4V7C	4C7	4.68	4.93	25	900	20	1	3	2
TLZ5V1	TLZ5V1A	5A1	4.81	5.07	20	800	20	1	2	2
	TLZ5V1B	5B1	4.94	5.2	20	800	20	1	2	2
	TLZ5V1C	5C1	5.09	5.37	20	800	20	1	2	2
TLZ5V6	TLZ5V6A	5A6	5.28	5.55	13	500	20	1	1	2
	TLZ5V6B	5B6	5.45	5.73	13	500	20	1	1	2
	TLZ5V6C	5C6	5.61	5.91	13	500	20	1	1	2
TLZ6V2	TLZ6V2A	6A2	5.78	6.09	10	300	20	1	3	4
	TLZ6V2B	6B2	5.96	6.27	10	300	20	1	3	4
	TLZ6V2C	6C2	6.12	6.44	10	300	20	1	3	4
TLZ6V8	TLZ6V8A	6A8	6.29	6.63	8	150	20	0.5	2	4
	TLZ6V8B	6B8	6.49	6.83	8	150	20	0.5	2	4
	TLZ6V8C	6C8	6.66	7.01	8	150	20	0.5	2	4
TLZ7V5	TLZ7V5A	7A5	6.85	7.22	8	120	20	0.5	3	6.5
	TLZ7V5B	7B5	7.07	7.45	8	120	20	0.5	3	6.73
	TLZ7V5C	7C5	7.29	7.67	8	120	20	0.5	3	6.93
TLZ8V2	TLZ8V2A	8A2	7.53	7.92	8	120	20	0.5	7.5	7.15
	TLZ8V2B	8B2	7.78	8.19	8	120	20	0.5	7.5	7.39
	TLZ8V2C	8C2	8.03	8.45	8	120	20	0.5	7.5	7.63
TLZ9V1	TLZ9V1A	9A1	8.29	8.73	8	120	20	0.5	0.04	7.88
	TLZ9V1B	9B1	8.57	9.01	8	120	20	0.5	0.04	8.14
	TLZ9V1C	9C1	8.83	9.3	8	120	20	0.5	0.04	8.39
TLZ10	TLZ10A	10A	9.12	9.59	8	120	20	0.5	0.04	8.66
	TLZ10B	10B	9.41	9.9	8	120	20	0.5	0.04	8.94
	TLZ10C	10C	9.7	10.2	8	120	20	0.5	0.04	9.22
	TLZ10D	10D	9.94	10.44	8	120	20	0.5	0.04	9.44

Part-number-group	Part-number	Marking Code	Zener Voltage		Dynamic Resistance		Test Current		Reverse Leakage Current	
			V_Z @ I_{ZT}		Z_Z @ I_{ZT}	Z_{ZK} @ I_{ZK}	I_{ZT}	I_{ZK}	I_R	@ V_R
			V	V	Ω	Ω	mA	mA	µA	V
			min	max	max	max			max	
TLZ11	TLZ11A	11A	10.18	10.71	10	120	10	0.5	0.04	9.67
	TLZ11B	11B	10.5	11.05	10	120	10	0.5	0.04	9.98
	TLZ11C	11C	10.82	11.38	10	120	10	0.5	0.04	10.28
TLZ12	TLZ12A	12A	11.13	11.71	12	110	10	0.5	0.04	10.6
	TLZ12B	12B	11.44	12.03	12	110	10	0.5	0.04	10.9
	TLZ12C	12C	11.74	12.35	12	110	10	0.5	0.04	11.2
TLZ13	TLZ13A	13A	12.11	12.75	14	110	10	0.5	0.04	11.5
	TLZ13B	13B	12.55	13.21	14	110	10	0.5	0.04	11.9
	TLZ13C	13C	12.99	13.66	14	110	10	0.5	0.04	12.3
TLZ15	TLZ15A	15A	13.44	14.13	16	110	10	0.5	0.04	12.8
	TLZ15B	15B	13.89	14.62	16	110	10	0.5	0.04	13.2
	TLZ15C	15C	14.35	15.09	16	110	10	0.5	0.04	13.6
TLZ16	TLZ16A	16A	14.8	15.57	18	150	10	0.5	0.04	14.1
	TLZ16B	16B	15.25	16.04	18	150	10	0.5	0.04	14.5
	TLZ16C	16C	15.69	16.51	18	150	10	0.5	0.04	14.9
TLZ18	TLZ18A	18A	16.22	17.06	23	150	10	0.5	0.04	15.4
	TLZ18B	18B	16.82	17.7	23	150	10	0.5	0.04	16
	TLZ18C	18C	17.42	18.33	23	150	10	0.5	0.04	16.5
TLZ20	TLZ20A	20A	18.02	18.96	28	200	10	0.5	0.04	17.1
	TLZ20B	20B	18.63	19.59	28	200	10	0.5	0.04	17.7
	TLZ20C	20C	19.23	20.22	28	200	10	0.5	0.04	18.3
	TLZ20D	20D	19.72	20.72	28	200	10	0.5	0.04	18.7
TLZ22	TLZ22A	22A	20.15	21.2	30	200	5	0.5	0.04	19.1
	TLZ22B	22B	20.64	21.71	30	200	5	0.5	0.04	19.6
	TLZ22C	22C	21.08	22.17	30	200	5	0.5	0.04	20
	TLZ22D	22D	21.52	22.63	30	200	5	0.5	0.04	20.4
TLZ24	TLZ24A	24A	22.05	23.18	35	200	5	0.5	0.04	20.9
	TLZ24B	24B	22.61	23.77	35	200	5	0.5	0.04	21.5
	TLZ24C	24C	23.12	24.31	35	200	5	0.5	0.04	22
	TLZ24D	24D	23.63	24.85	35	200	5	0.5	0.04	22.4
TLZ27	TLZ27A	27A	24.26	25.52	45	250	5	0.5	0.04	23
	TLZ27B	27B	24.97	26.26	45	250	5	0.5	0.04	23.7
	TLZ27C	27C	25.63	26.95	45	250	5	0.5	0.04	24.3
	TLZ27D	27D	26.29	27.64	45	250	5	0.5	0.04	25
TLZ30	TLZ30A	30A	26.99	28.39	55	250	5	0.5	0.04	25.6
	TLZ30B	30B	27.7	29.13	55	250	5	0.5	0.04	26.3
	TLZ30C	30C	28.36	29.82	55	250	5	0.5	0.04	26.9
	TLZ30D	30D	29.02	30.51	55	250	5	0.5	0.04	27.6
TLZ33	TLZ33A	33A	29.68	31.22	65	250	5	0.5	0.04	28.2
	TLZ33B	33B	30.32	31.88	65	250	5	0.5	0.04	28.8
	TLZ33C	33C	30.9	32.5	65	250	5	0.5	0.04	29.4
	TLZ33D	33D	31.49	33.11	65	250	5	0.5	0.04	29.9
TLZ36	TLZ36A	36A	32.14	33.79	75	250	5	0.5	0.04	30.5
	TLZ36B	36B	32.79	34.49	75	250	5	0.5	0.04	31.2
	TLZ36C	36C	33.4	35.13	75	250	5	0.5	0.04	31.7
	TLZ36D	36D	34.01	35.77	75	250	5	0.5	0.04	32.3

Part-number-group	Part-number	Marking Code	Zener Voltage		Dynamic Resistance		Test Current		Reverse Leakage Current	
			V_Z @ I_{ZT}		Z_Z @ I_{ZT}	Z_{ZK} @ I_{ZK}	I_{ZT}	I_{ZK}	I_R	@ V_R
			V	V	Ω	Ω	mA	mA	µA	V
			min	max	max	max			max	
TLZ39	TLZ39A	39A	34.68	36.47	85	250	5	0.5	0.04	32.9
	TLZ39B	39B	35.36	37.19	85	250	5	0.5	0.04	33.6
	TLZ39C	39C	36	37.85	85	250	5	0.5	0.04	34.2
	TLZ39D	39D	36.63	38.52	85	250	5	0.5	0.04	34.8
	TLZ39E	39E	37.36	39.29	85	250	5	0.5	0.04	35.5
	TLZ39F	39F	38.14	40.11	85	250	5	0.5	0.04	36.2
	TLZ39G	39G	38.94	40.8	85	250	5	0.5	0.04	37
TLZ43	TLZ43	43	40	45	90	-	5	-	0.04	38
TLZ47	TLZ47	47	44	49	90	-	5	-	0.04	41.8
TLZ51	TLZ51	51	48	54	100	-	5	-	0.04	45.6
TLZ56	TLZ56	56	53	60	100	-	5	-	0.04	50.4

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

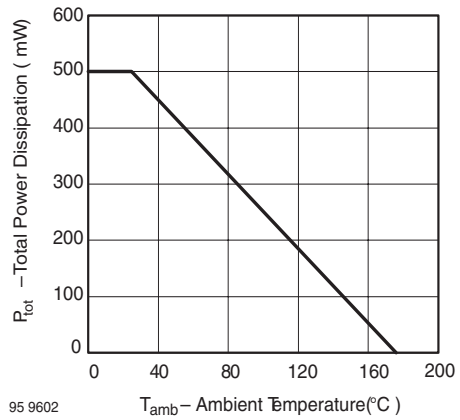


Figure 1. Total Power Dissipation vs. Ambient Temperature

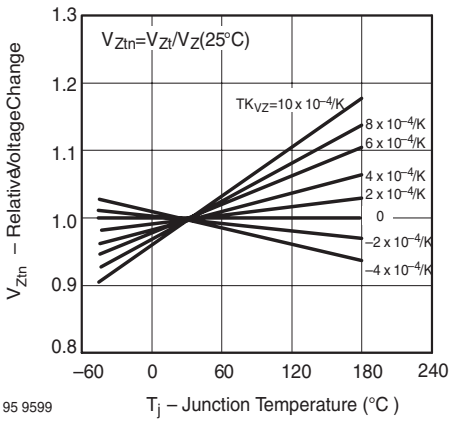


Figure 3. Typical Change of Working Voltage vs. Junction Temperature

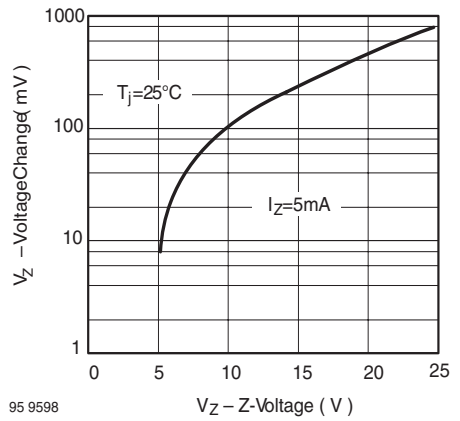


Figure 2. Typical Change of Working Voltage under Operating Conditions at T_{amb}=25°C

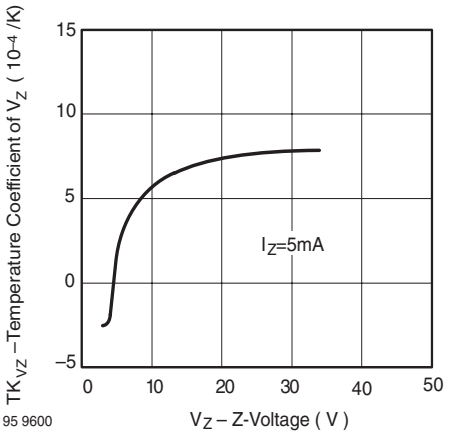


Figure 4. Temperature Coefficient of Vz vs. Z-Voltage

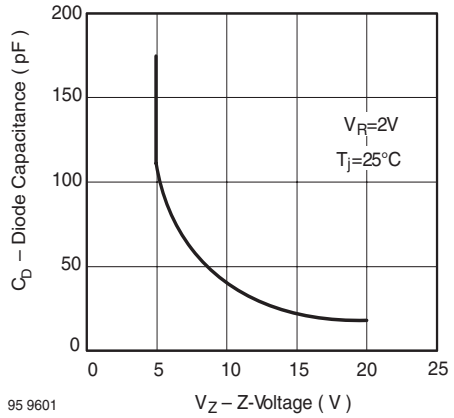


Figure 5. Diode Capacitance vs. Z-Voltage

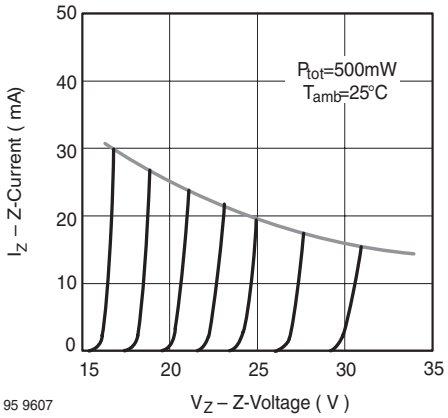


Figure 8. Z-Current vs. Z-Voltage

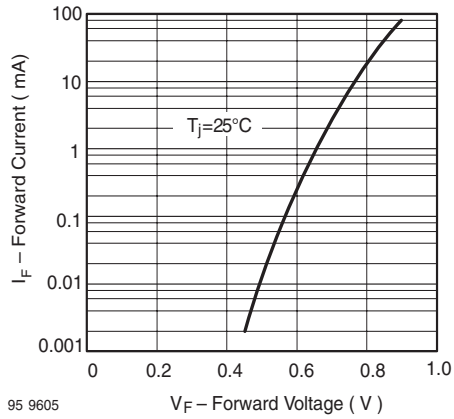


Figure 6. Forward Current vs. Forward Voltage

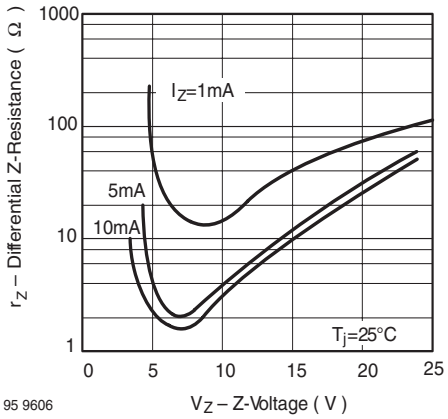


Figure 9. Differential Z-Resistance vs. Z-Voltage

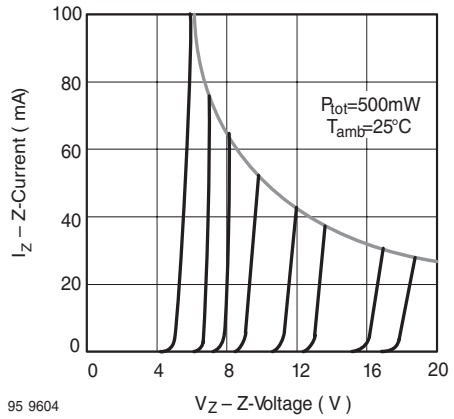


Figure 7. Z-Current vs. Z-Voltage

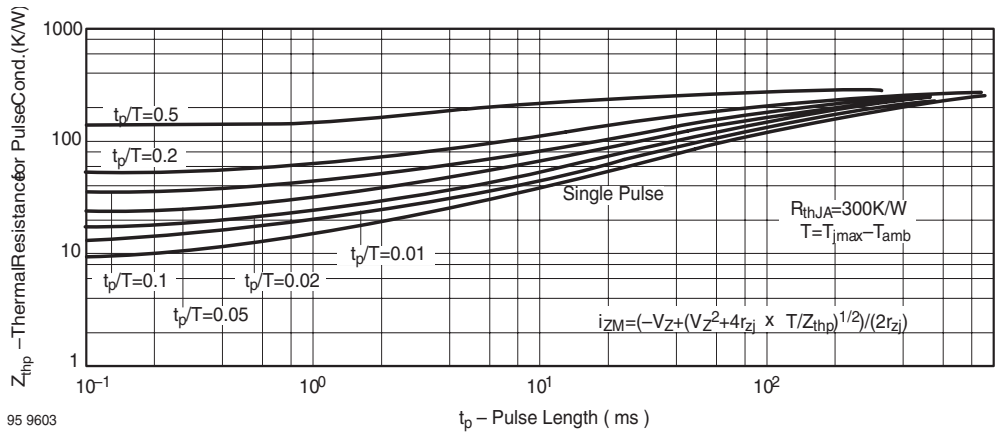
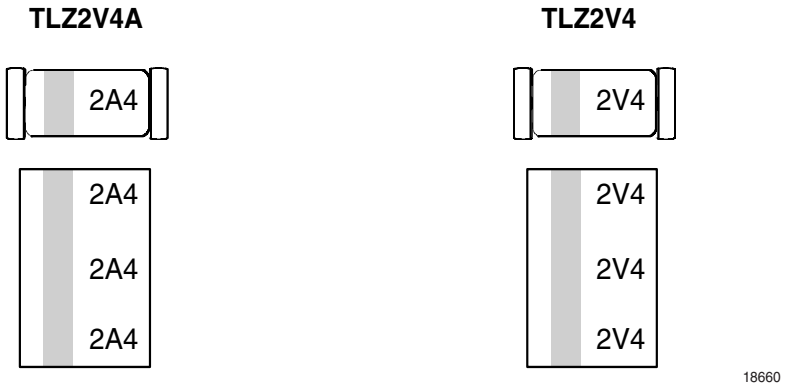


Figure 10. Thermal Response

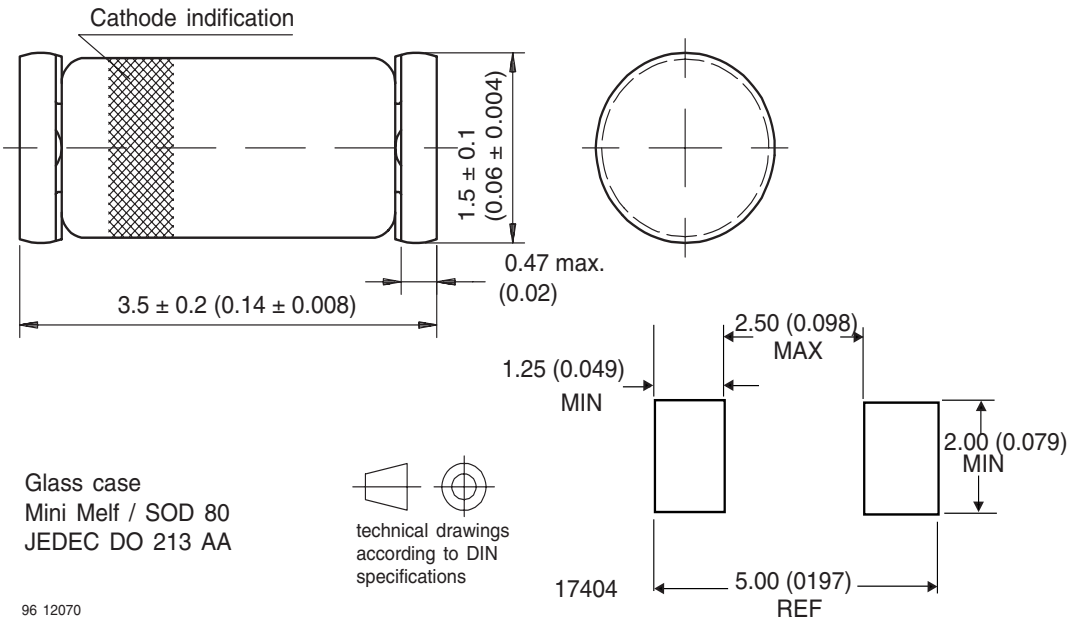
Marking Voltage Group



Remark:

The Zener voltage TLZ2V4 or Zener voltage group TLZ2V4A is printet with max 3 digits 3 times on the surface. The marking should be readable at minimum 2 times. The third print is allowed to be incomplete due to tolerances in Diameter of the glassbody.

Package Dimensions in mm (Inches)



Ozone Depleting Substances Policy Statement

It is the policy of **Vishay Semiconductor GmbH** to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operatingsystems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany
Telephone: 49 (0)7131 67 2831, Fax number: 49 (0)7131 67 2423

射 频 和 天 线 设 计 培 训 课 程 推 荐

易迪拓培训(www.edatop.com)由数名来自于研发第一线的资深工程师发起成立，致力并专注于微波、射频、天线设计研发人才的培养；我们于 2006 年整合合并微波 EDA 网(www.mweda.com)，现已发展成为国内最大的微波射频和天线设计人才培养基地，成功推出多套微波射频以及天线设计经典培训课程和 ADS、HFSS 等专业软件使用培训课程，广受客户好评；并先后与人民邮电出版社、电子工业出版社合作出版了多本专业图书，帮助数万名工程师提升了专业技术能力。客户遍布中兴通讯、研通高频、埃威航电、国人通信等多家国内知名公司，以及台湾工业技术研究院、永业科技、全一电子等多家台湾地区企业。

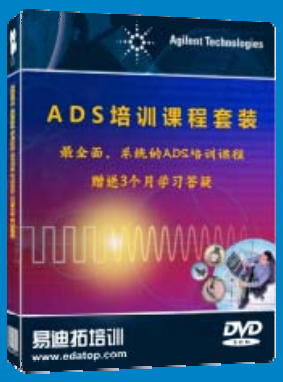
易迪拓培训课程列表：http://www.edatop.com/peixun/rfe/129.html

射频工程师养成培训课程套装

该套装精选了射频专业基础培训课程、射频仿真设计培训课程和射频电路测量培训课程三个类别共 30 门视频培训课程和 3 本图书教材；旨在引领学员全面学习一个射频工程师需要熟悉、理解和掌握的专业知识和研发设计能力。通过套装的学习，能够让学员完全达到和胜任一个合格的射频工程师的要求…

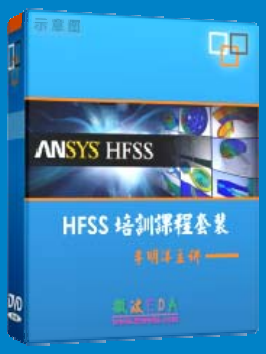
课程网址：http://www.edatop.com/peixun/rfe/110.html

ADS 学习培训课程套装



该套装是迄今国内最全面、最权威的 ADS 培训教程，共包含 10 门 ADS 学习培训课程。课程是由具有多年 ADS 使用经验的微波射频与通信系统设计领域资深专家讲解，并多结合设计实例，由浅入深、详细而又全面地讲解了 ADS 在微波射频电路设计、通信系统设计和电磁仿真设计方面的内容。能让您在最短的时间内学会使用 ADS，迅速提升个人技术能力，把 ADS 真正应用到实际研发工作中去，成为 ADS 设计专家...

课程网址： http://www.edatop.com/peixun/ads/13.html



HFSS 学习培训课程套装

该套课程套装包含了本站全部 HFSS 培训课程，是迄今国内最全面、最专业的 HFSS 培训教程套装，可以帮助您从零开始，全面深入学习 HFSS 的各项功能和在多个方面的工程应用。购买套装，更可超值赠送 3 个月免费学习答疑，随时解答您学习过程中遇到的棘手问题，让您的 HFSS 学习更加轻松顺畅…

课程网址：http://www.edatop.com/peixun/hfss/11.html

CST 学习培训课程套装

该培训套装由易迪拓培训联合微波 EDA 网共同推出，是最全面、系统、专业的 CST 微波工作室培训课程套装，所有课程都由经验丰富的专家授课，视频教学，可以帮助您从零开始，全面系统地学习 CST 微波工作的各项功能及其在微波射频、天线设计等领域的设计应用。且购买该套装，还可超值赠送 3 个月免费学习答疑…

课程网址：http://www.edatop.com/peixun/cst/24.html

HFSS 天线设计培训课程套装

套装包含 6 门视频课程和 1 本图书，课程从基础讲起，内容由浅入深，理论介绍和实际操作讲解相结合，全面系统的讲解了 HFSS 天线设计的全过程。是国内最全面、最专业的 HFSS 天线设计课程，可以帮助您快速学习掌握如何使用 HFSS 设计天线，让天线设计不再难…

课程网址：http://www.edatop.com/peixun/hfss/122.html

13.56MHz NFC/RFID 线圈天线设计培训课程套装

套装包含 4 门视频培训课程，培训将 13.56MHz 线圈天线设计原理和仿真设计实践相结合，全面系统地讲解了 13.56MHz 线圈天线的工作原理、设计方法、设计考量以及使用 HFSS 和 CST 仿真分析线圈天线的具体操作，同时还介绍了 13.56MHz 线圈天线匹配电路的设计和调试。通过该套课程的学习，可以帮助您快速学习掌握 13.56MHz 线圈天线及其匹配电路的原理、设计和调试…

详情浏览：http://www.edatop.com/peixun/antenna/116.html

我们的课程优势：

※ 成立于 2004 年，10 多年丰富的行业经验，

※ 一直致力并专注于微波射频和天线设计工程师的培养，更了解该行业对人才的要求

※ 经验丰富的一线资深工程师讲授，结合实际工程案例，直观、实用、易学

联系我们：

※ 易迪拓培训官网：http://www.edatop.com

※ 微波 EDA 网：http://www.mweda.com

※ 官方淘宝店：http://shop36920890.taobao.com