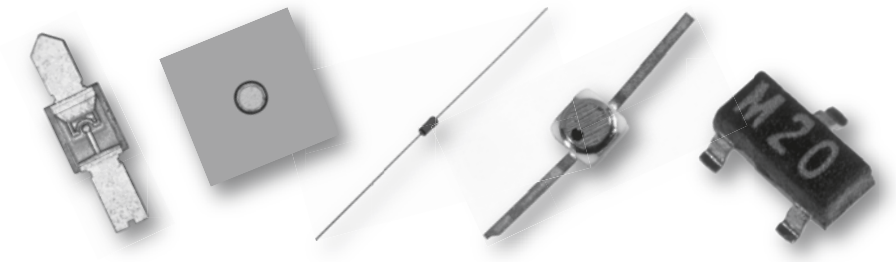
Silicon Step Recovery Diodes

AEROFLEX
A passion for performance.



Description

The diodes feature fully passivated, true mesa construction for sharp transitions and improved stability. The beam lead SRDs have the industry's fastest transition times for millimeter wave multiplication and picosecond pulse forming.

Features

- Output combs to 40+ GHz
- Transition times down to 35 ps
- Screening per MIL-PRF-19500 and MIL-PRF-38534 available

Absolute Maximum Ratings (Chip and Beam Lead)

Parameters	Rating
Reverse Voltage	Rated V_{BR}
Forward Current	50 mA (Beam Lead)
	150 mA (Chip)
Power Dissipation	150 °C / θ_{JC} at T_{HSK} = +25 °C
	Derate linearly to zero at T_{HSK} = +175 °C
Junction Temperature	-65 °C to +175 °C
Storage Temperature	-65 °C to +175 °C
Mounting / Bonding Temperature	+235 °C for 10 seconds (Beam Lead)
	+310 °C for 30 seconds (Chip)

Chip and Beam Lead

Model	V_{BR} MIN V	C_J MIN pF	C_J MAX pF	τ MIN ns	τ TYP ns	t_t TYP ps	t_t MAX ps	F_{CO} TYP GHz	θ_{JC} MAX °C/W	Package
MMDB30-B11	14	0.15	0.25	1.0	4.0	30	38	530	600	B11
MMDB35-B11	16	0.13	0.20	1.0	4.0	35	45	482	600	B11
MMDB45-B11	25	0.11	0.20	3.0	8.0	45	58	410	600	B11
MMD805-C12	60	2.5	3.5	80	100	250	300	130	15	C12
MMD810-C12	50	1.5	2.5	40	70	200	250	200	22	C12
MMD820-C12	40	1.0	1.7	30	60	80	100	390	25	C12
MMD830-C11	25	0.5	1.0	15	30	60	80	700	45	C11
MMD832-C11	20	0.4	0.8	10	15	60	80	660	50	C11
MMD835-C11	15	0.3	0.7	10	20	60	70	800	60	C11
MMD837-C11	20	0.2	0.4	5	10	60	70	1,300	60	C11
MMD840-C11	15	0.2	0.4	7	15	60	70	880	60	C11
Test Conditions	I_R = 10 µA	V_R = 6 V F = 1 MHz		I_F = 10 mA I_R = 6 mA Measured at 50% Recovery		I_F = 3 mA V_R = 7 V I_F = 10 mA V_R = 10 V		F_{CO} = 1 / 2πR_S		

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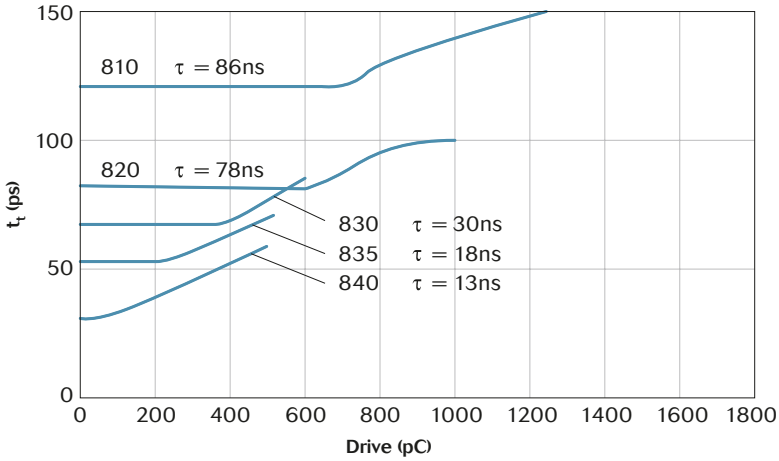
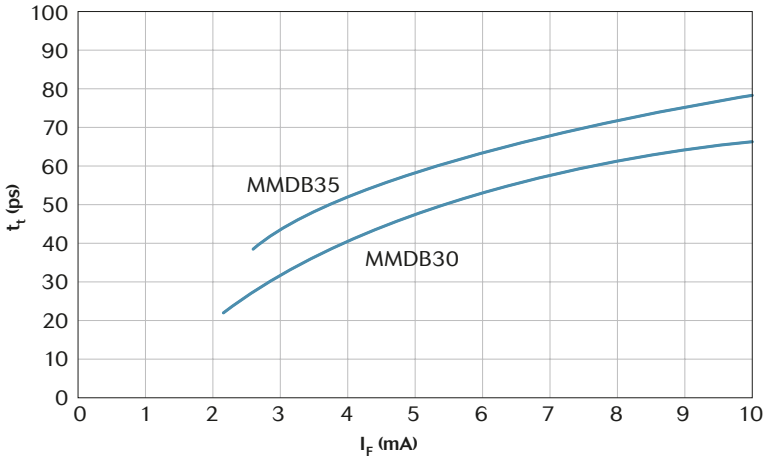
METELICS

Revision Date: 09/23/05

Transistion Time vs. Drive



Transistion Time vs. Forward Current



Absolute Maximum Ratings (Ceramic Packaged)

Parameters	Rating
Reverse Voltage	Rated VB_R
Forward Current	50 mA (MMDB)
	150 mA (MMD)
Power DIssipation	See individual detailed data sheet
Junction Temperature	-65 °C to +175 °C
Storage Temperatuire	-65 °C to +175 °C
Soldering Temperature	+260 °C peak per JEDEC J-STD-20C

Silicon Step Recovery Diodes

Ceramic Packaged

Model	V_{BR} MIN V	C_J MIN pF	C_J MAX pF	τ MIN ns	τ TYP ns	t_t TYP ps	t_t MAX ps	C_P TYP pF	L_P TYP pF	Package
MMD805-E28 / 28X	60	3.1	3.6	80	100	250	300	0.08	0.4	E28 / 28X
MMD805-H20	60	3.2	3.7	80	100	250	300	0.18	0.5	H20
MMD805-T86	60	3.2	3.7	80	100	250	300	0.18	1.0	T86
MMD805-T89	60	3.3	3.8	80	100	250	300	0.25	0.4	T89
MMD805-0805-2	60	3.1	3.6	80	100	250	300	0.06	0.4	0805-2
MMD810-E28 / 28X	50	2.1	2.6	40	70	200	250	0.08	0.4	E28 / 28X
MMD810-H20	50	2.2	2.7	40	70	200	250	0.18	0.5	H20
MMD810-T86	50	2.2	2.7	40	70	200	250	0.18	1.0	T86
MMD810-T89	50	2.3	2.8	40	70	200	250	0.25	0.4	T89
MMD820-E28 / 28X	40	1.4	1.8	30	60	80	100	0.08	0.4	E28 / 28X
MMD820-H20	40	1.5	1.9	30	60	80	100	0.18	0.5	H20
MMD820-T86	40	1.5	1.9	30	60	80	100	0.18	1.0	T86
MMD820-0805-2	40	1.4	1.8	30	60	80	100	0.06	0.4	805-2
MMD830-E28 / 28X	25	0.83	1.1	15	30	60	80	0.08	0.4	E28 / 28X
MMD830-H20	25	0.93	1.2	15	30	60	80	0.18	0.5	H20
MMD830-T86	25	0.93	1.2	15	30	60	80	0.18	1.0	T86
MMD830-0805-2	25	0.81	1.1	15	30	60	80	0.06	0.4	805-2
MMD832-E28 / 28X	20	0.68	0.9	10	15	60	80	0.08	0.4	E28 / 28X
MMD832-H20	20	0.78	1.0	10	15	60	80	0.18	0.5	H20
MMD832-T86	20	0.78	1.0	10	15	60	80	0.18	1.0	T86
MMD832-0805-2	20	0.66	0.88	10	15	60	80	0.06	0.4	805-2
MMD835-E28 / 28X	15	0.58	0.81	10	20	50	70	0.08	0.4	E28 / 28X
MMD835-H20	15	0.62	0.85	10	20	50	70	0.12	0.4	H27
MMD835-T86	15	0.68	0.91	10	20	50	70	0.18	1.0	T86
MMD835-0805-2	15	0.56	0.78	10	20	50	70	0.06	0.4	805-2
MMD837-E28 / 28X	20	0.38	0.51	5	10	50	70	0.08	0.4	E28 / 28X
MMD837-H27	20	0.42	0.55	5	10	50	70	0.12	0.4	H27
MMD837-T86	20	0.48	0.61	5	10	50	70	0.18	1.0	T86
MMD837-0805-2	20	0.36	0.48	5	10	50	70	0.06	0.4	805-2
MMD840-E28 / 28X	15	0.38	0.51	7	15	50	70	0.08	0.4	E28 / 28X
MMD840-H27	15	0.42	0.55	7	15	50	70	0.12	0.4	H27
MMD840-T86	15	0.48	0.61	7	15	50	70	0.18	1.0	T86
MMD840-0805-2	15	0.36	0.48	7	15	50	70	0.06	0.4	0805-2
MMDB30-E28 / 28X	14	0.28	0.36	1.0	4.0	30	38	0.08	0.4	E28 / 28X
MMDB30-0402	14	0.25	0.32	1.0	4.0	30	38	0.05	0.2	0402
MMDB30-0805-2	14	0.26	0.33	1.0	4.0	30	38	0.06	0.4	0805-2
MMDB35-E28 / 28X	16	0.25	0.31	1.0	4.0	35	45	0.08	0.4	E28 / 28X
MMDB35-T86	16	0.22	0.28	1.0	4.0	35	45	0.05	0.2	0402
MMDB35-0805-2	16	0.23	0.29	1.0	4.0	35	45	0.06	0.4	0805-2
MMDB45-E28 / 28X	25	0.24	0.31	3.0	8.0	45	58	0.08	0.4	E28 / 28X
MMDB45-T86	25	0.21	0.28	3.0	8.0	45	58	0.05	0.2	0402
MMDB45-0805-2	25	0.22	0.29	3.0	8.0	45	58	0.06	0.4	0805-2
Test Conditions	I_R = 10 µA	V_R = 6 V F = 1 MHz		I_F = 10 mA I_R = 6 mA Measured at 50% Recovery		I_F = 10 mA V_R = 10 V I_F = 3 mA V_R = 7 V		F = 1 MHz		

Absolute Maximum Ratings (Glass Packaged)

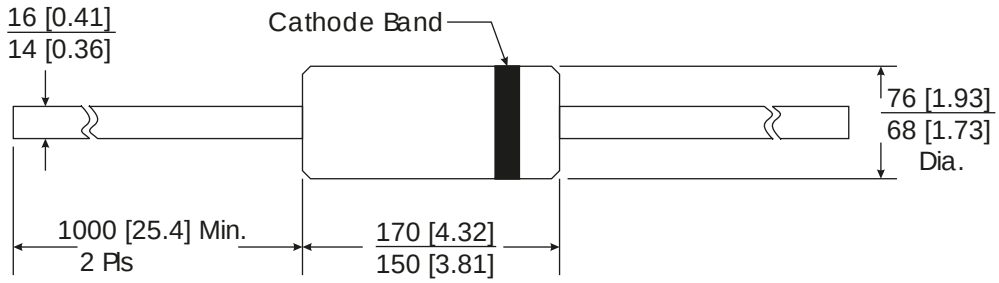
Parameters	Rating
Reverse Voltage	Rated V_{BR}
Forward Current	100 mA
Thermal Resistance, Junction to Case	600 °C / W
Junction Temperature	-65 °C to +200 °C
Storage Temperature	-65 °C to +200 °C
Soldering Temperature	+230 °C for 10 seconds

Glass Packaged

Model	V_{BR} MIN V	C_J MAX pF	C_T TYP pF	τ MIN ns	τ TYP ns	t_t TYP ps	t_t MAX ps	C_P TYP pF	L_P TYP nH	Package
MMD0151	15	0.65	0.55	10	15	100	- - -	0.15	2.5	A15
MMD0153	25	0.40	0.40	10	15	95	- - -	0.15	2.5	A15
MMD0803	70	6.0	4.0	200	250	275	400	0.15	2.5	A15
MMD0815	50	4.0	3.0	100	135	180	320	0.15	2.5	A15
MMD0825	45	2.0	1.0	30	50	130	160	0.15	2.5	A15
MMD0833	25	1.6	1.65	10	15	90	- - -	0.15	2.5	A15
MMD0840	15	0.60	0.60	10	20	75	- - -	0.15	2.5	A15
Test Conditions	I_R = 10 µA	V_R = 6 V V_R = 10 V F = 1 MHz		I_F = 10 mA I_R = 6 mA Measured at 50% Recovery		I_F = 10 mA V_R = 10 V Chip data, package limited to 100 ps		F = 1 MHz		

Outline Drawing

A15



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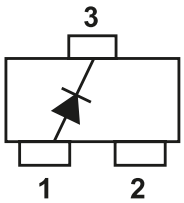
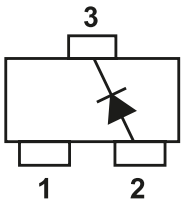
Configuration Code



-0S



-1S

Absolute Maximum Ratings (Plastic Packaged)

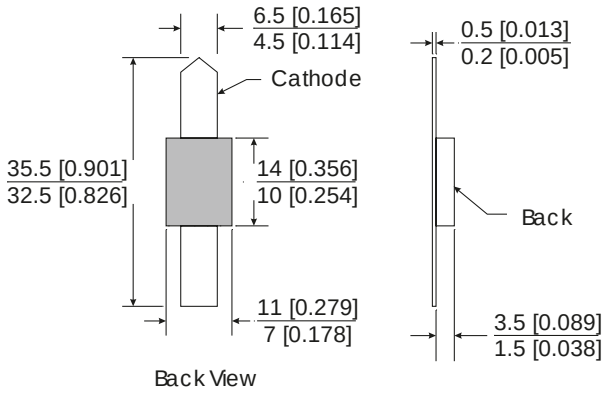
Parameters	Rating
Reverse Voltage	Rated V_{BR}
Forward Current	100 mA
Power Dissipation	250 mW, Derate linearly to zero at $T_A = +150$ °C
Operating Temperature	-65 °C to +150 °C
Storage Temperature	-65 °C to +150 °C
Soldering Temperature	+260 °C peak per JEDEC J-STD-20C

Plastic Packaged

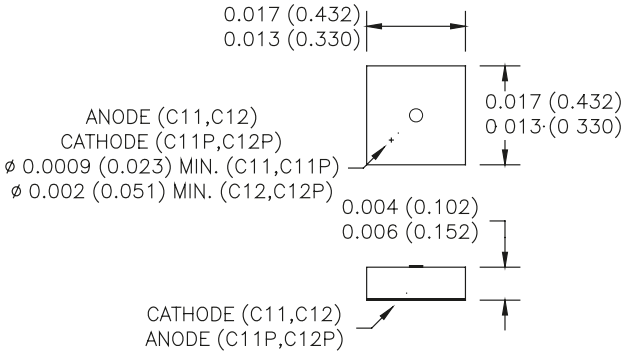
Model	Configuration	V_{BR} MIN V	C_J MIN pF	C_J MAX pF	τ MIN ns	τ TYP ns	t_t TYP ps	t_t MAX ps	Package
SMMD805-SOT23	-0S, 1S	60	2.5	3.5	80	100	250	300	SOT23
SMMD810-SOT23	-0S, 1S	50	1.5	2.5	40	70	200	250	SOT23
SMMD820-SOT23	-0S, 1S	40	1.0	1.7	30	60	110	125	SOT23
SMMD830-SOT23	-0S, 1S	25	0.5	1.0	15	30	90	110	SOT23
SMMD832-SOT23	-0S, 1S	20	0.4	0.8	10	20	85	100	SOT23
SMMD835-SOT23	-0S, 1S	20	0.3	0.7	10	15	80	100	SOT23
SMMD837-SOT23	-0S, 1S	20	0.2	0.4	5	12	75	90	SOT23
SMMD840-SOT23	-0S, 1S	15	0.2	0.4	5	10	70	90	SOT23
SMMD805-SOD323	---	60	2.5	3.5	80	100	250	300	SOD323
SMMD810-SOD323	---	50	1.5	2.5	40	70	200	250	SOD323
SMMD820-SOD323	---	40	1.0	1.7	30	60	110	125	SOD323
SMMD830-SOD323	---	25	0.5	1.0	15	30	90	110	SOD323
SMMD832-SOD323	---	20	0.4	0.8	10	20	85	100	SOD323
SMMD835-SOD323	---	20	0.3	0.7	10	15	80	100	SOD323
SMMD837-SOD323	---	20	0.2	0.4	5	12	75	90	SOD323
SMMD840-SOD323	---	15	0.2	0.4	5	10	70	90	SOD323
Test Conditions		$I_R = 10\ \mu A$	$V_R = 6$ V, $F = 1$ MHz		$I_F = 10$ mA, $I_R = 6$ mA, Measured at 50% Recovery		$I_F = 10$ mA, $V_R = 10$ V		

Outline Drawings

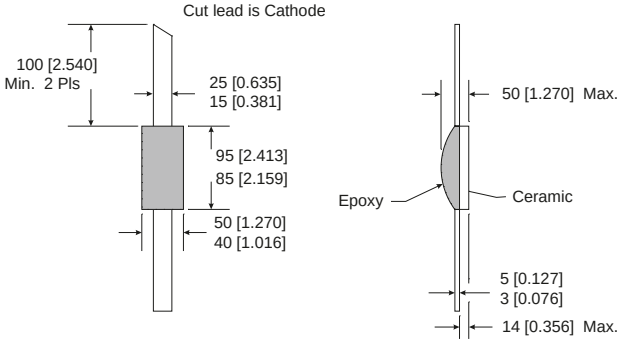
B11



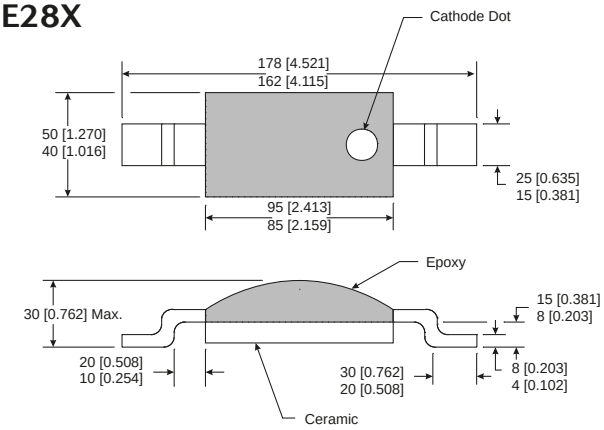
C11 / C12



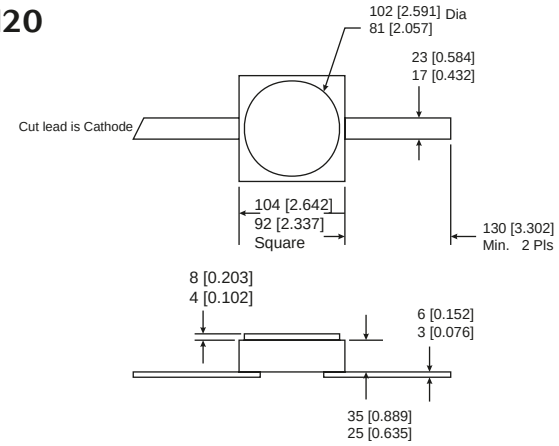
E28



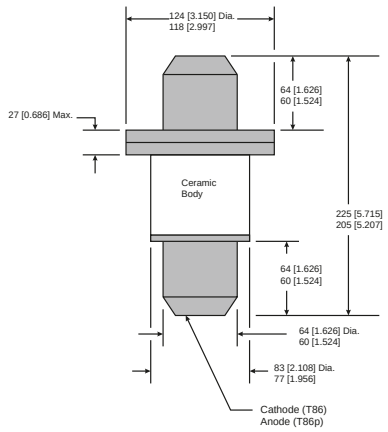
E28X



H20



T86



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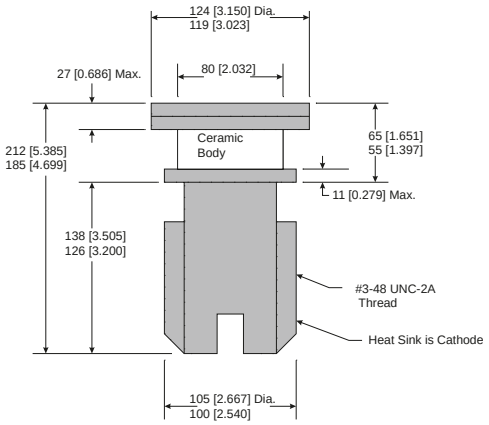
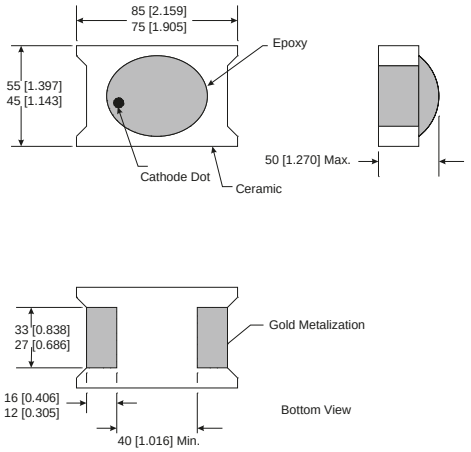
Outline Drawings

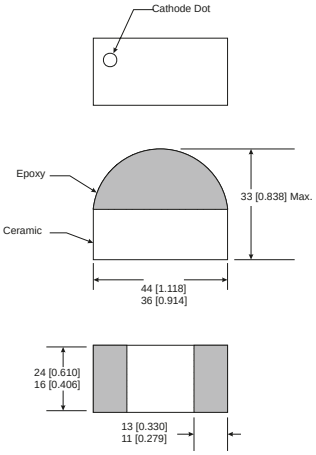
T89



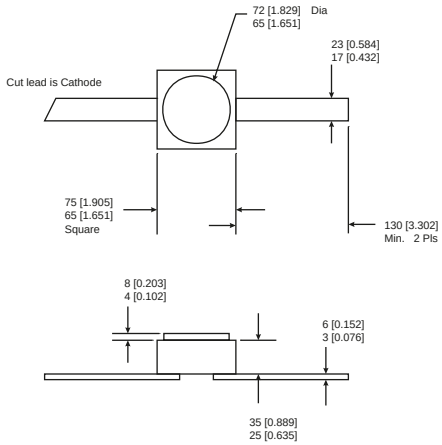
0805-2



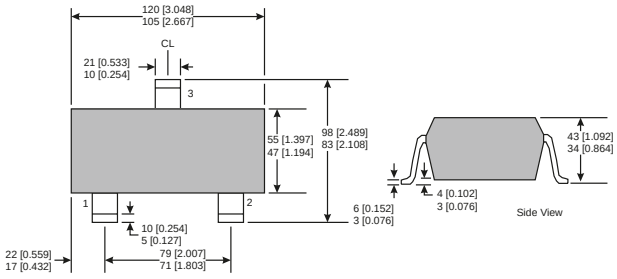
0402



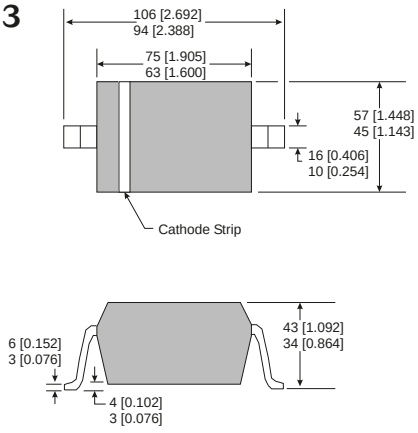
H27



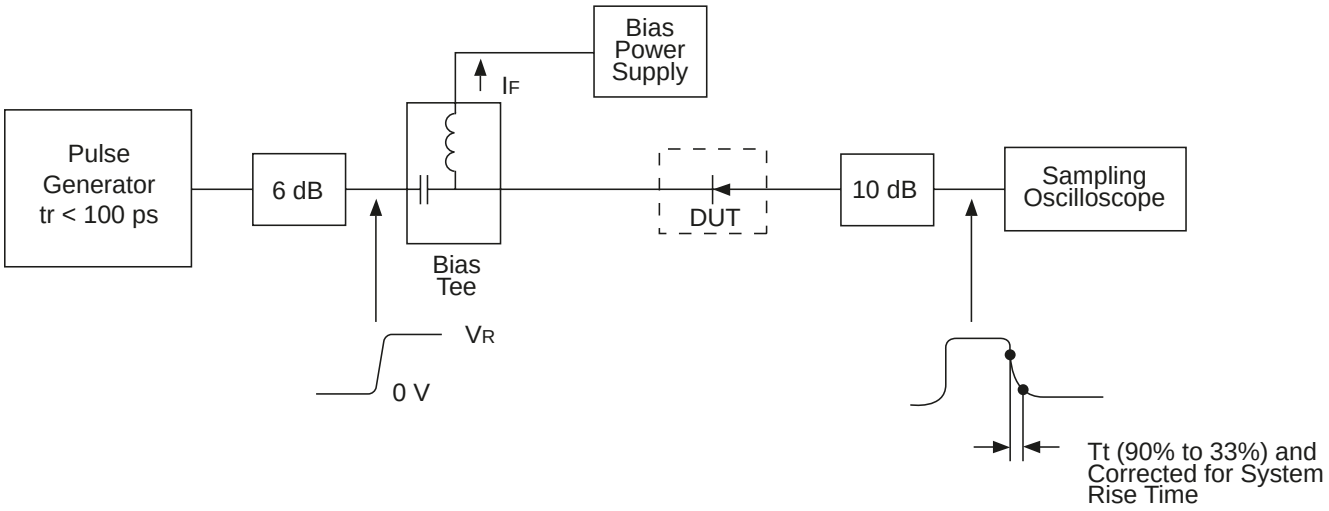
SOT23



SOD323



Transition Time Test Circuit



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AEROFLEX
A passion for performance.

Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.