Maximum Ratings, Total Device @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	200	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	625	°C/W
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +150	°C

Maximum Ratings, Pre-Biased NPN Transistor @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CC}	50	V
Base-Emitter Voltage	V_{in}	-5 to +12	V
Output Current	I_O	100	mA

Maximum Ratings, Switching Diode @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Non-Repetitive Peak Reverse Voltage	V_{RM}	100	V
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	75	V
RMS Reverse Voltage	$V_{R(RMS)}$	53	V
Average Rectified Output Current (Note 5)	I_O	250	mA
Non-Repetitive Peak Forward Surge Current @ t = 1.0μs @ t = 1.0ms	I_{FSM}	4.0 1.0	A

Electrical Characteristics, Pre-Biased NPN Transistor @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	$V_{I(off)}$	0.5	—	—	V	V_{CC} = 5V, I_O = 100μA
	$V_{I(on)}$	—	—	1.1	V	V_O = 0.3V, I_O = 5mA
Output Voltage	$V_{O(on)}$	—	—	0.3	V	I_O/I_I = 50mA/0.25mA
Input Current	I_I	—	—	3.6	mA	V_I = 5V
Output Current	$I_{O(off)}$	—	—	0.5	uA	V_{CC} = 50V, V_I = 0V
DC Current Gain	G_I	80	—	—	—	V_O = 5V, I_O = 10mA
Input Resistor Tolerance (Note 6)	ΔR1	-30	—	+30	%	-
Resistance Ratio Tolerance (Note 6)	ΔR2/R1	-20	—	+20	%	-
Gain-Bandwidth Product (Note 6)	f_T	—	250	—	MHz	V_{CE} = 10V, I_E = 5mA, f = 100MHz

Electrical Characteristics, Switching Diode @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 7)	$V_{(BR)R}$	75	—	V	I_R = 10μA
Forward Voltage	V_F	0.62 — — —	0.72 0.855 1.0 1.25	V	I_F = 5.0mA I_F = 10mA I_F = 100mA I_F = 150mA
Reverse Current (Note 7)	I_R	—	2.5 50 30 25	μA μA μA nA	V_R = 75V V_R = 75V, T_J = 150°C V_R = 25V, T_J = 150°C V_R = 20V
Total Capacitance	C_T	—	4.0	pF	V_R = 0, f = 1.0MHz
Reverse Recovery Time	t_{rr}	—	4.0	ns	I_F = I_R = 10mA, I_{rr} = 0.1 x I_R, R_L = 100Ω

Notes: 5. Device mounted on FR-4 PCB, 2oz 1inch squared copper pad PC board.
6. Transistor: for reference only.
7. Short duration pulse test used to minimize self-heating effect.

Device Characteristics

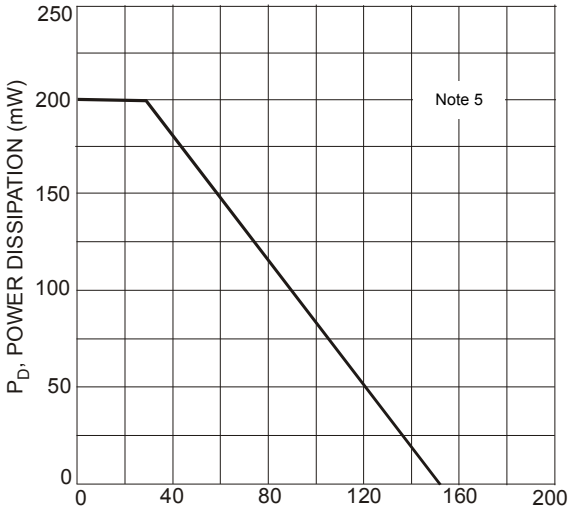


Fig. 1 Power Derating Curve (Total Device)

Pre-Biased NPN Transistor Elements

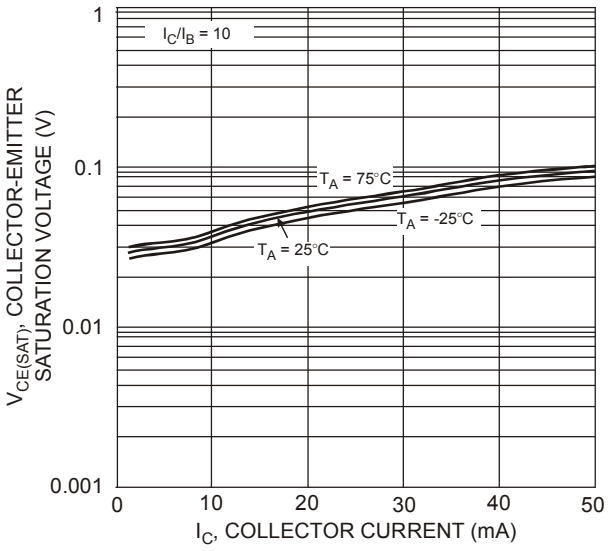


Fig. 2 Typical $V_{CE(SAT)}$ vs. I_C

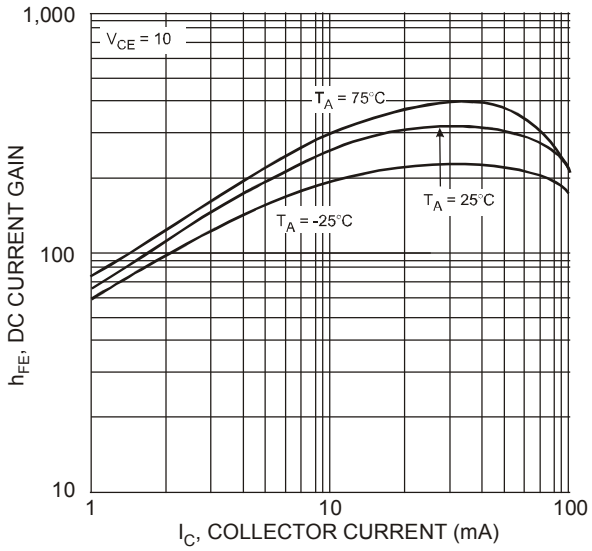


Fig. 3 Typical DC Current Gain

Pre-Biased NPN Transistor Elements (continued)

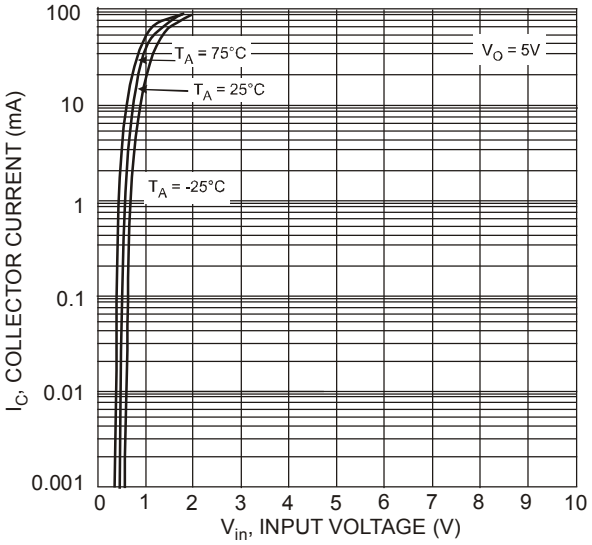


Fig. 4 Typical Collector Current vs. Input Voltage

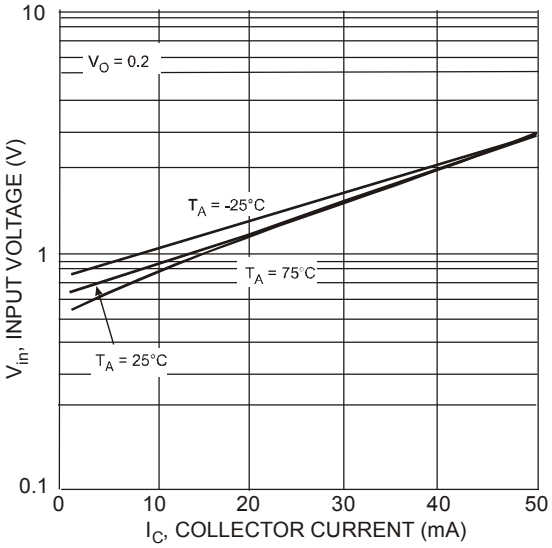


Fig. 5 Typical Input Voltage vs. Collector Current

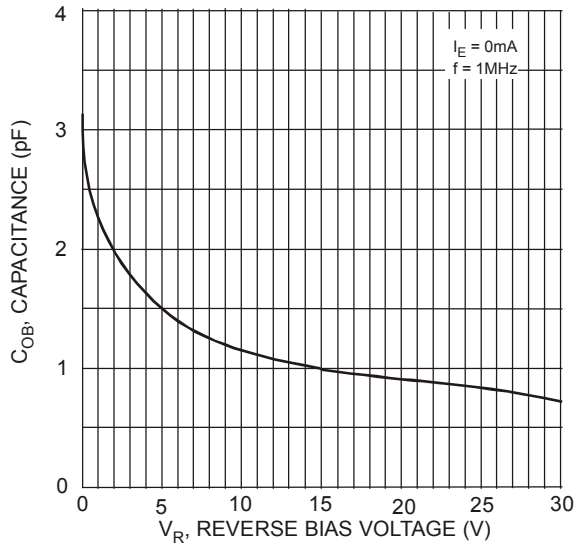


Fig. 6 Typical Output Capacitance

Switching Diode Elements

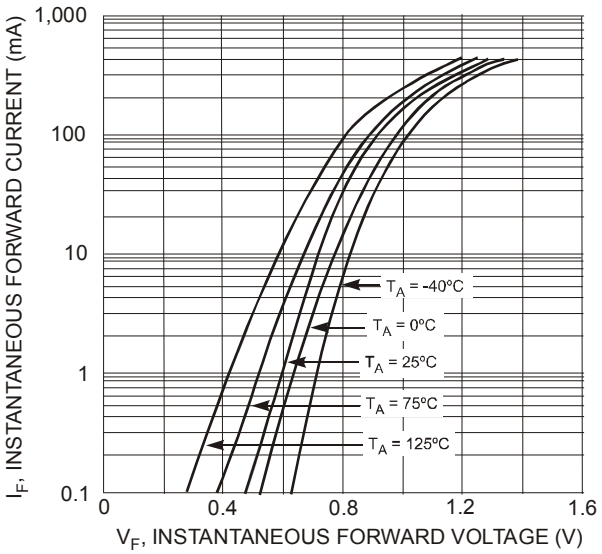


Fig. 7 Typical Forward Characteristics

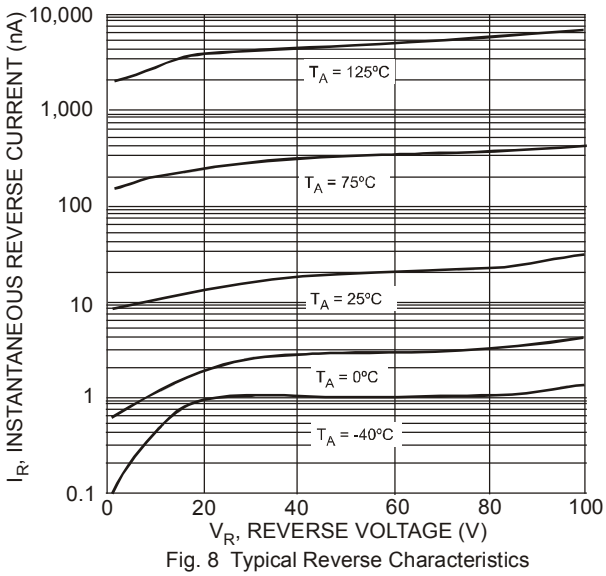


Fig. 8 Typical Reverse Characteristics

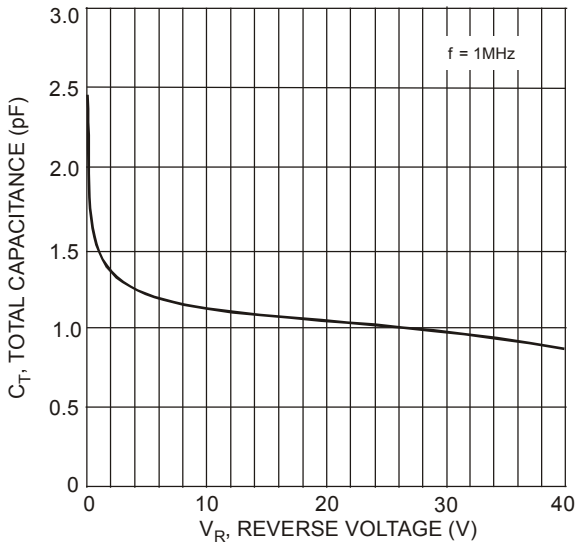
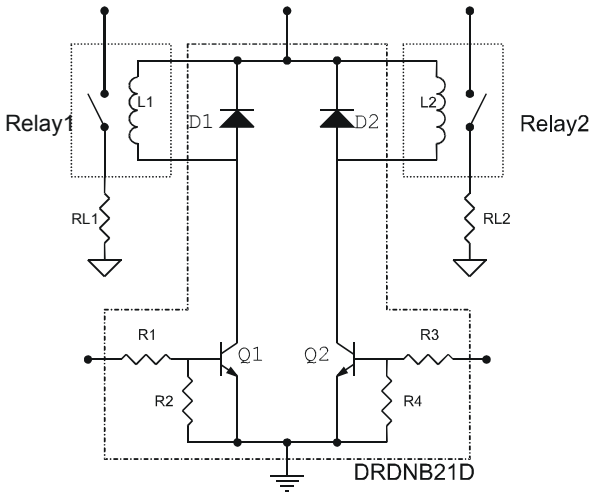


Fig. 9 Typical Capacitance vs. Reverse Voltage

Typical Application Circuit

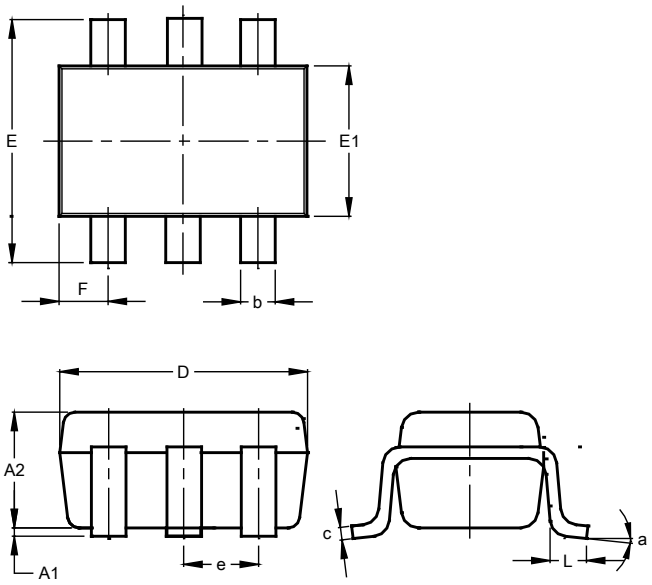


Typical Application Circuit DRDNB21D with two independent relays.

Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT363

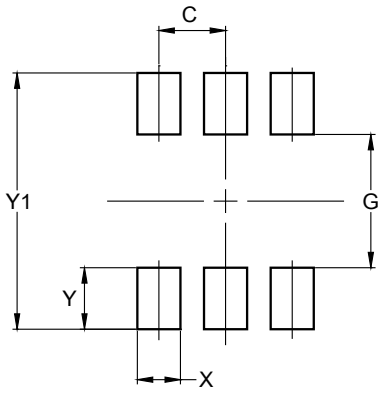


SOT363			
Dim	**Min**	**Max**	**Typ**
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.10	0.30	0.25
c	0.10	0.22	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
F	0.40	0.45	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT363



Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.420
Y	0.600
Y1	2.500

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