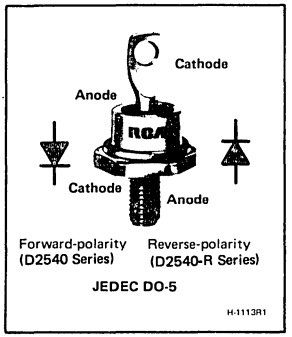
RCA Solid State Division

Rectifiers

D2540 Series
D2540-R Series



40-A, 50- to- 600 V, Fast-Recovery Silicon Rectifiers

General Purpose Types for High-Current Applications

Features:

- Available in reverse-polarity versions: D2540A-R, D2540B-R, D2540D-R, D2540F-R, D2540M-R
- Low reverse-recovery current
- Low forward-voltage drop
- Low-thermal-resistance hermetic package
- Fast reverse-recovery time — 0.35 μs max. from 125 A peak

Package \ Voltage	50 V	100 V	200 V	400 V	600 V
	Types	Types	Types	Types	Types
DO-5	D2540F (40956)	D2540A (40957)	D2540B (40958)	D2540D (40959)	D2540M (40960)
DO-5	D2540F-R (40956R)	D2540A-R (40957R)	D2540B-R (40958R)	D2540D-R (40959R)	D2540M-R (40960R)

Numbers in parentheses are former RCA type numbers.

RCA D2540 series and D2540-R series‡ inclusive, are diffused-junction-type silicon rectifiers in a stud-type hermetic package. These devices differ only in their voltage ratings.

All types feature fast reverse-recovery time (0.35 μs max. from 125 A peak) with "soft" recovery characteristics that reduce the generation of RFI and voltage transients.

These devices are intended for use in high-speed inverters, choppers, high-frequency rectifiers, "free-wheeling" diode circuits, and other high-frequency applications.

‡ Types D2540A-R, B-R, D-R, and M-R were formerly RCA Dev. Nos. TA7984-TA7987, respectively.

MAXIMUM RATINGS, *Absolute-Maximum Values:*

		D2540F D2540F-R	D2540A D2540A-R	D2540B D2540B-R	D2540D D2540D-R	D2540M D2540M-R	
REVERSE VOLTAGE							
Repetitive peak	V_{RRM}	50	100	200	400	600	V
Non-repetitive peak	V_{RSM}	100	200	300	600	800	V
FORWARD CURRENT (Conduction angle = 180°, half sine wave):							
RMS (T_C = 100°C)[D]	$I_{F(RMS)}$	← 60 →					A
Average (T_C = 100°C)[D]	I_o	← 40 →					A
Peak-surge (non-repetitive): At junction temperature (T_J) = 150°C For one-half cycle of applied voltage, 60 Hz (8.3 ms)	I_{FSM}	← 700 →					A
Peak (repetitive)	I_{FRM}	← 195 →					A
TEMPERATURE RANGE:							
Storage and Operating (Junction)		← −40 to 150 →					°C

[D] Case temperature is measured at center of any flat surface on the heagonal head of the mounting stud.

ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	LIMITS ALL TYPES MIN.	LIMITS ALL TYPES MAX.	UNITS
Reverse Current:				
Static				
For V_{RRM} = max. rated value, $I_F = 0$, $T_C = 25^oC$	I_{RM}	–	100	μA
$T_C = 100^oC$		–	2.5	mA
Instantaneous Forward Voltage Drop:				
At i_F = 100 A, $T_J = 25^oC$, See Figure 2.	v_F	–	1.8	V
Reverse-Recovery Time:				
For circuit shown in Figure 1:				
At I_{FRM} = 125 A, di/dt = 25 A/μs, pulse duration = 15 μs				
$T_C = 25^oC$	t_{rr}	–	0.35	μs
Thermal Resistance (Junction-to-Case)	$R_{\theta JC}$	–	0.9	°C/W

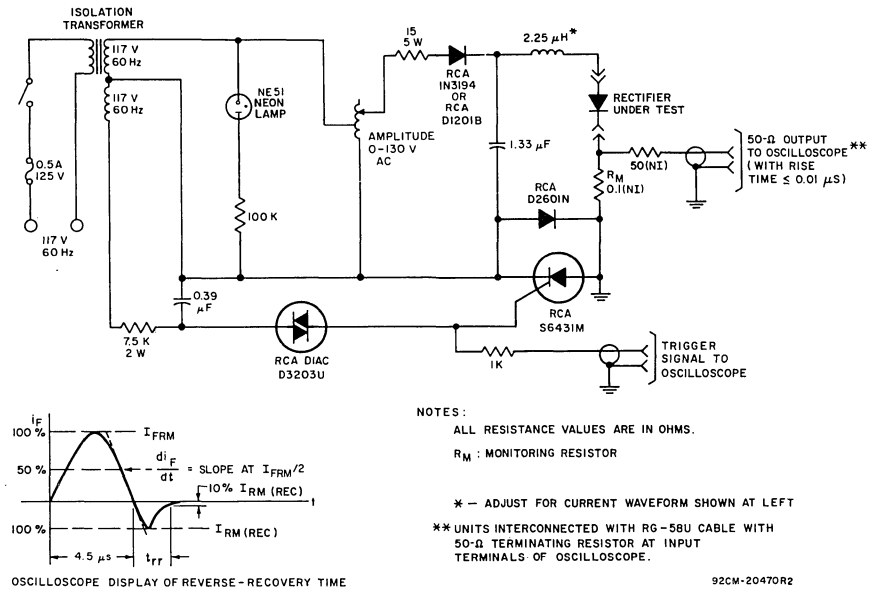


Fig. 1—Oscilloscope display and test circuit for measurement of reverse-recovery time.

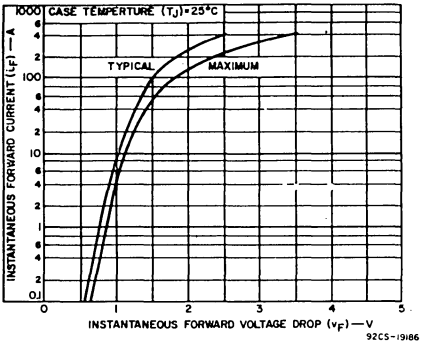


Fig.2—Forward current as a function of forward voltage drop.

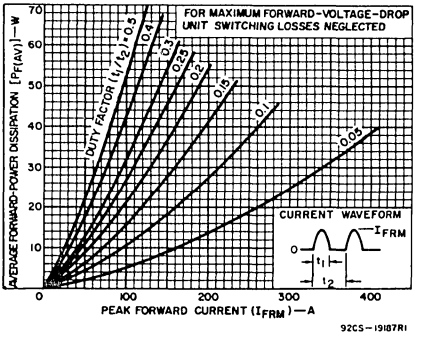


Fig.3—Average forward-power dissipation for maximum forward-voltage-drop unit.

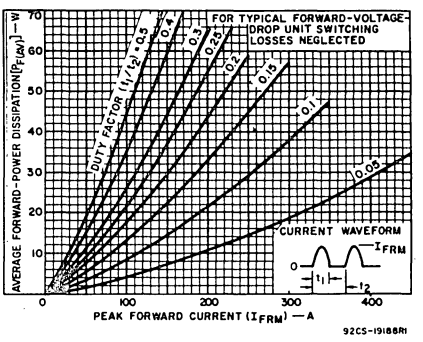


Fig.4—Average forward-power dissipation for typical forward-voltage-drop unit.

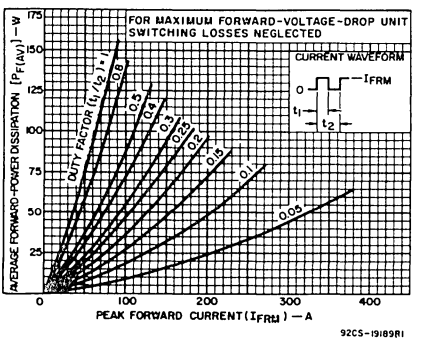


Fig.5—Average forward-power dissipation for maximum forward-voltage-drop unit.

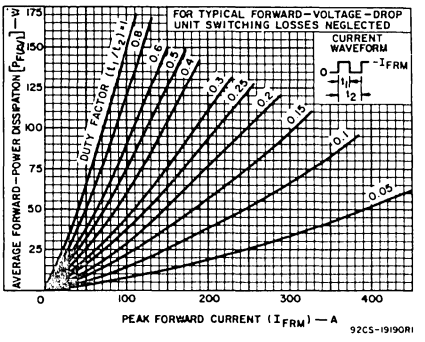


Fig.6—Average forward-power dissipation for typical forward-voltage-drop unit.

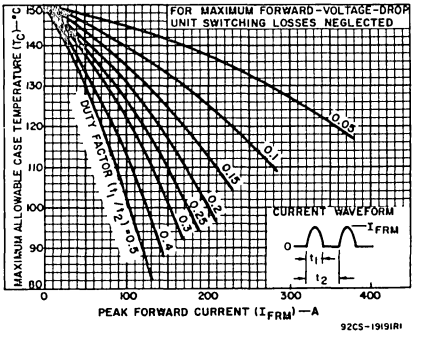


Fig.7—Maximum allowable case temperature for maximum forward-voltage-drop unit.

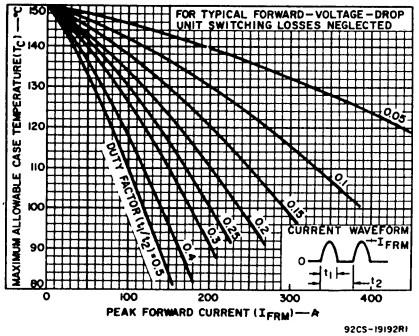


Fig.8—Maximum allowable case temperature for typical forward-voltage-drop unit.

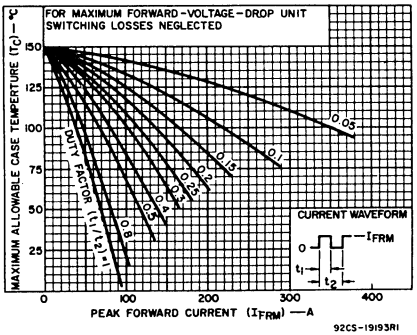


Fig.9—Maximum allowable case temperature for maximum forward-voltage-drop unit.

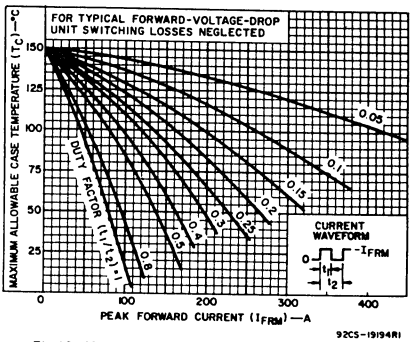


Fig.10—Maximum allowable case temperature for typical forward-voltage-drop unit.