


SPECIFICATION

DEVICE NAME : IGBT
 TYPE NAME : F5024
 SPEC. No. : MS5F4193
 DATE : Nov. - 10 - 1997

Fuji Electric Co., Ltd.

This Specification is subject to change without notice.

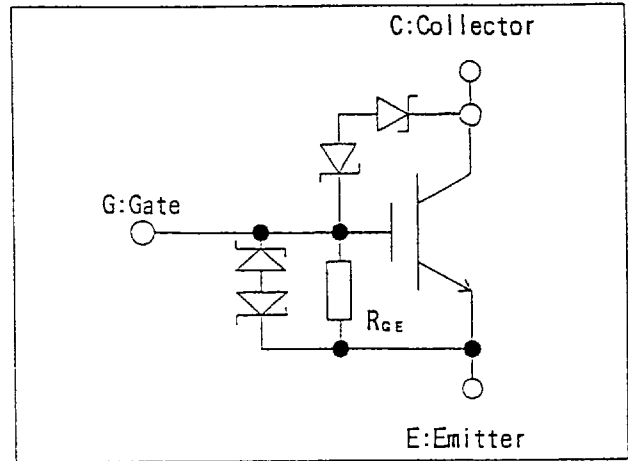
	DATE	NAME	APPROVED	Fuji Electric Co., Ltd.	
DRAWN	Nov. - 10 - '97	S. Takeuchi		DWG. NO.	MS5F4193
CHECKED	Nov. - 10 - '97	S. Furukata			

F 5 0 2 4

1. Outline Drawing

TO-220

2. Equivalent circuit



3. Absolute maximum ratings (Tc=25°C)

Items	Symbols	Ratings	Units
Collector-Emitter Voltage	V_{CER}	410	V
Gate-Emitter Voltage	V_{GES}	± 6	V
Collector Current	I_C	10	A
Reverse Collector Current ($P_w \leq 100 \mu s$)	$-I_C$	12	A
Power Dissipation	P_D	80	W
Electrostatic Voltage (150pF, 150Ω)	Gate - Emitter	2	KV
	Collector - Emitter	25	
Operating Temperature	T_j	+150	°C
Storage Temperature	T_{stg}	-55 ~ +150	°C

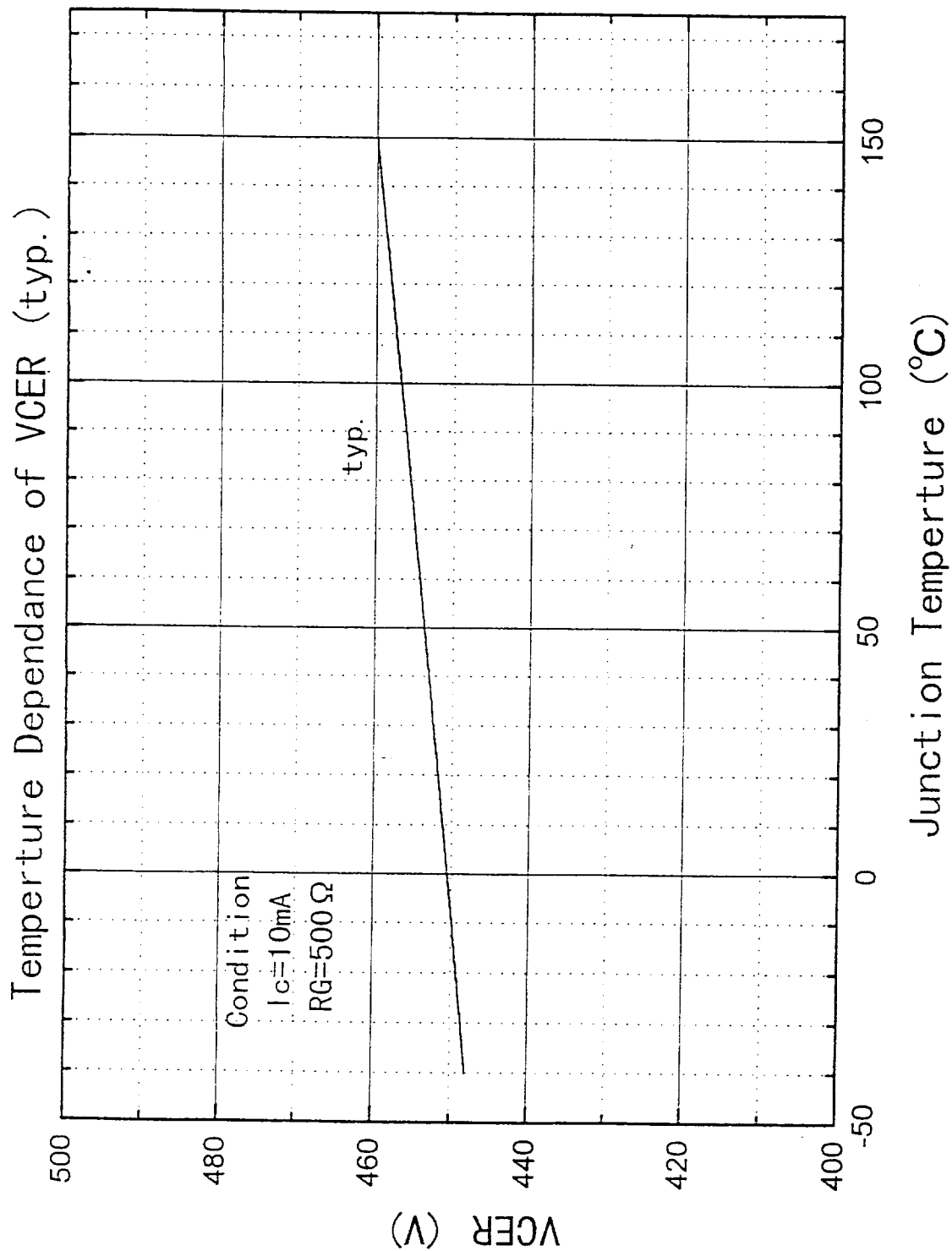
4. Electrical Characteristics (at $T_c=25^\circ\text{C}$ unless otherwise specified)

Items	Symbols	Characteristics			Conditions	Unit
		min.	typ.	max.		
Collector-Emitter Voltage	V_{CEr}	410		490	$T_j=-40\sim 150^\circ\text{C}$ $R_{GE}=500\ \Omega$ $I_C=10\text{mA}$	V
Zero gate voltage Collector Current	I_{CES}			100	$T_j=125^\circ\text{C}$ $V_{GE}=0\text{V}$ $V_{CE}=300\text{V}$	μA
Gate-Emitter Resistance	R_{GE}	10		30	$T_j=-40\sim 150^\circ\text{C}$	$\text{k}\Omega$
Gate-Emitter Voltage	V_{GES}	± 6		± 10	$I_G = \pm 2\text{mA}$	V
Collector Emitter Reverse Leakage	$-I_c$			100	$T_j=-40\sim 150^\circ\text{C}$ $-V_{CE}=15\text{V}$	mA
Collector Emitter Reverse Breakdown Voltage	$-V_{CE}$	36		60	$-I_c = 75\text{mA}$	V
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	0.7		2.6	$T_j=-40\sim 150^\circ\text{C}$ $V_{CE}=36\text{V}$ $I_C = 1\text{mA}$	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		1.3	2.5	$T_j=150^\circ\text{C}$ $V_{GE}=3.2\text{V}$ $I_C = 10\text{A}$	V
Input capacitance	C_{ies}		800		$V_{GE}=0\text{V}$ $V_{CE}=15\text{V}$ $f = 1\text{MHz}$	pF
Output capacitance	C_{oes}		120			
Reverse transfer capacitance	C_{res}		45			

5. Unclamped Inductive Switching Characteristics

Items	Characteristics			Conditions	Unit
	min.	typ.	max.		
Single Pulse Collector Emitter Avalanche Energy	230			Starting $T_j=150^\circ\text{C}$ $L = 5\text{mH}$	mJ

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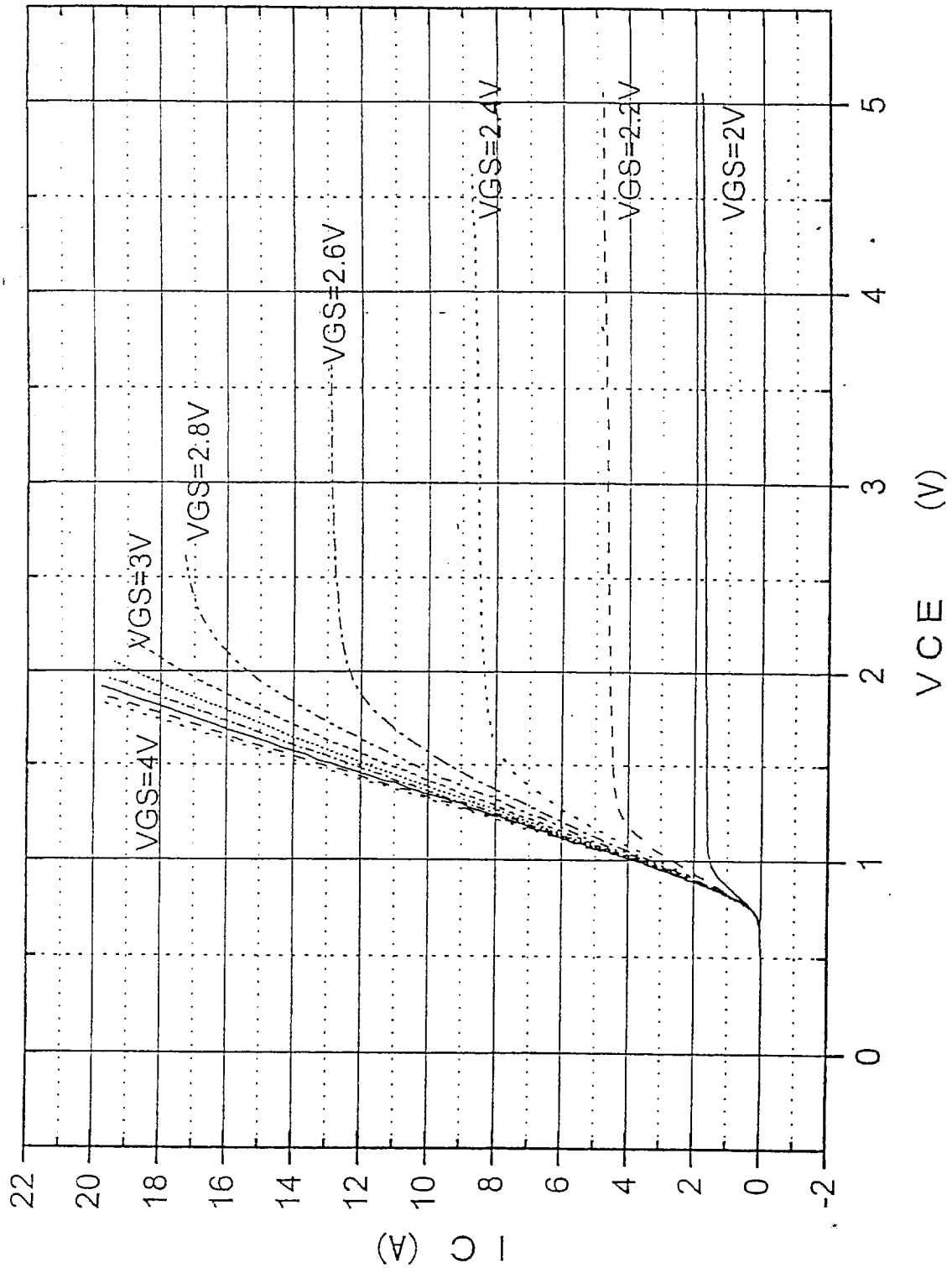
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F5024 Output Characteristics (T_C=25°C, Typ.)



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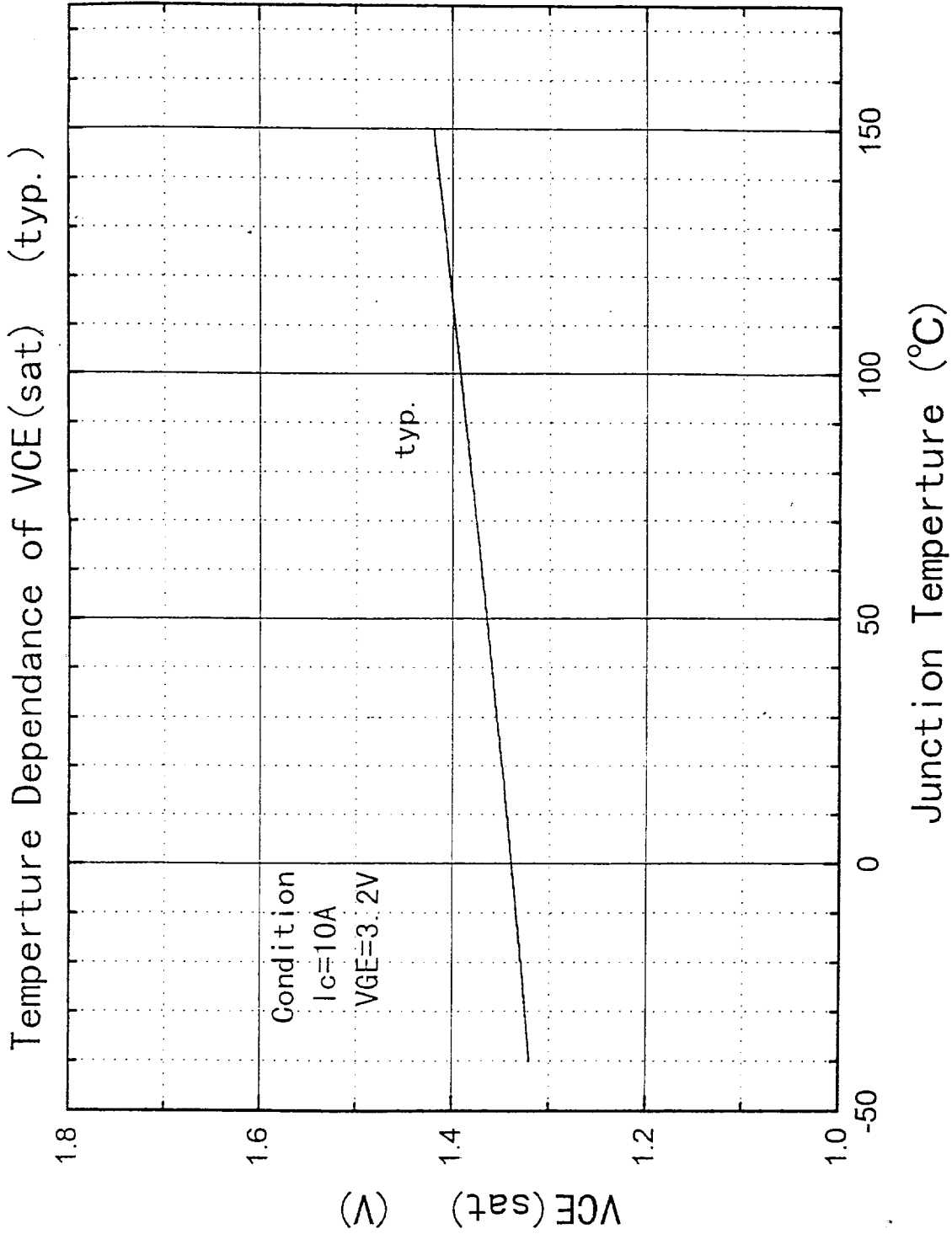
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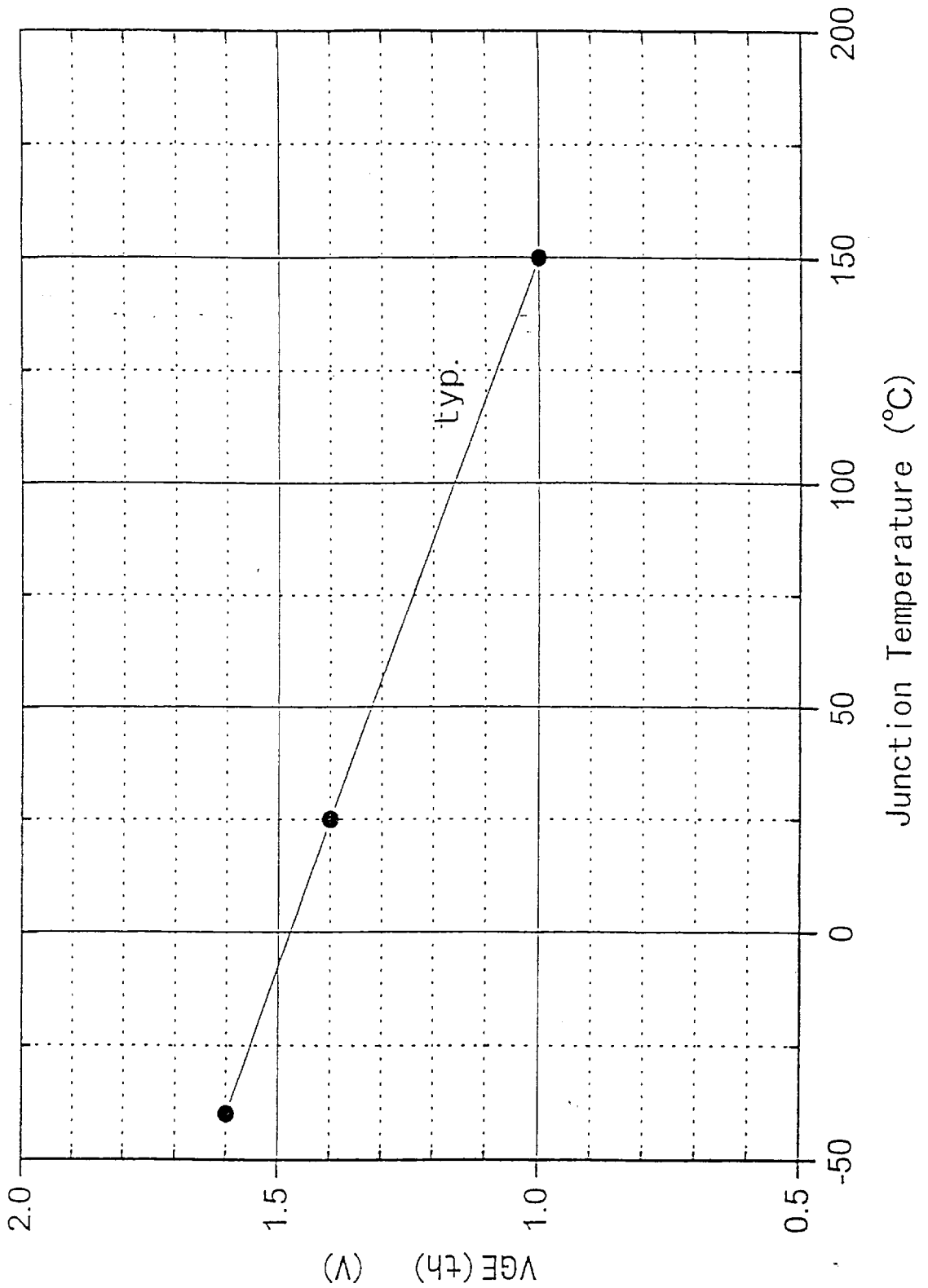
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Temperature Dependence of VGE (th)



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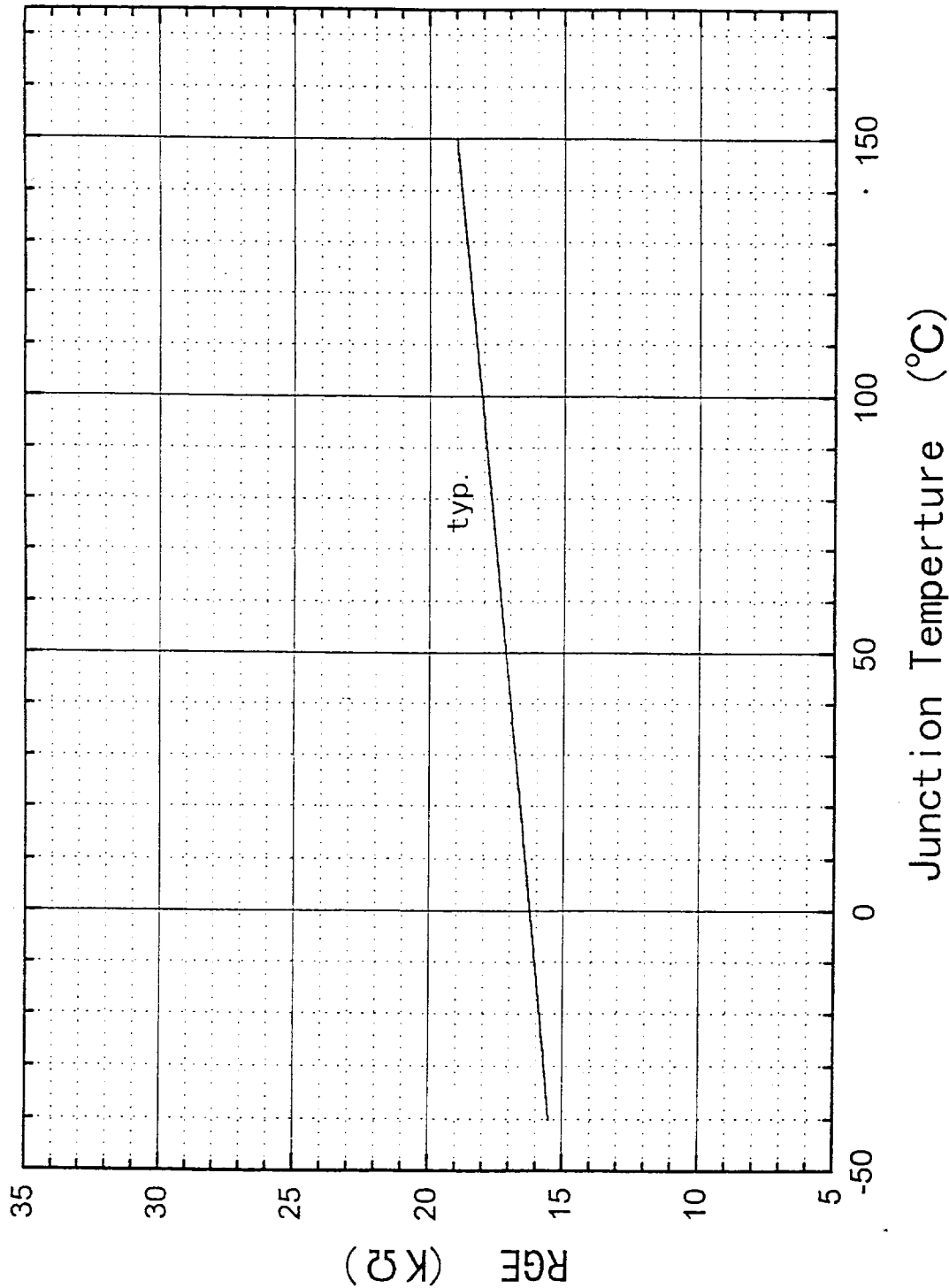
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Temperature Dependence of RGE (typ.)



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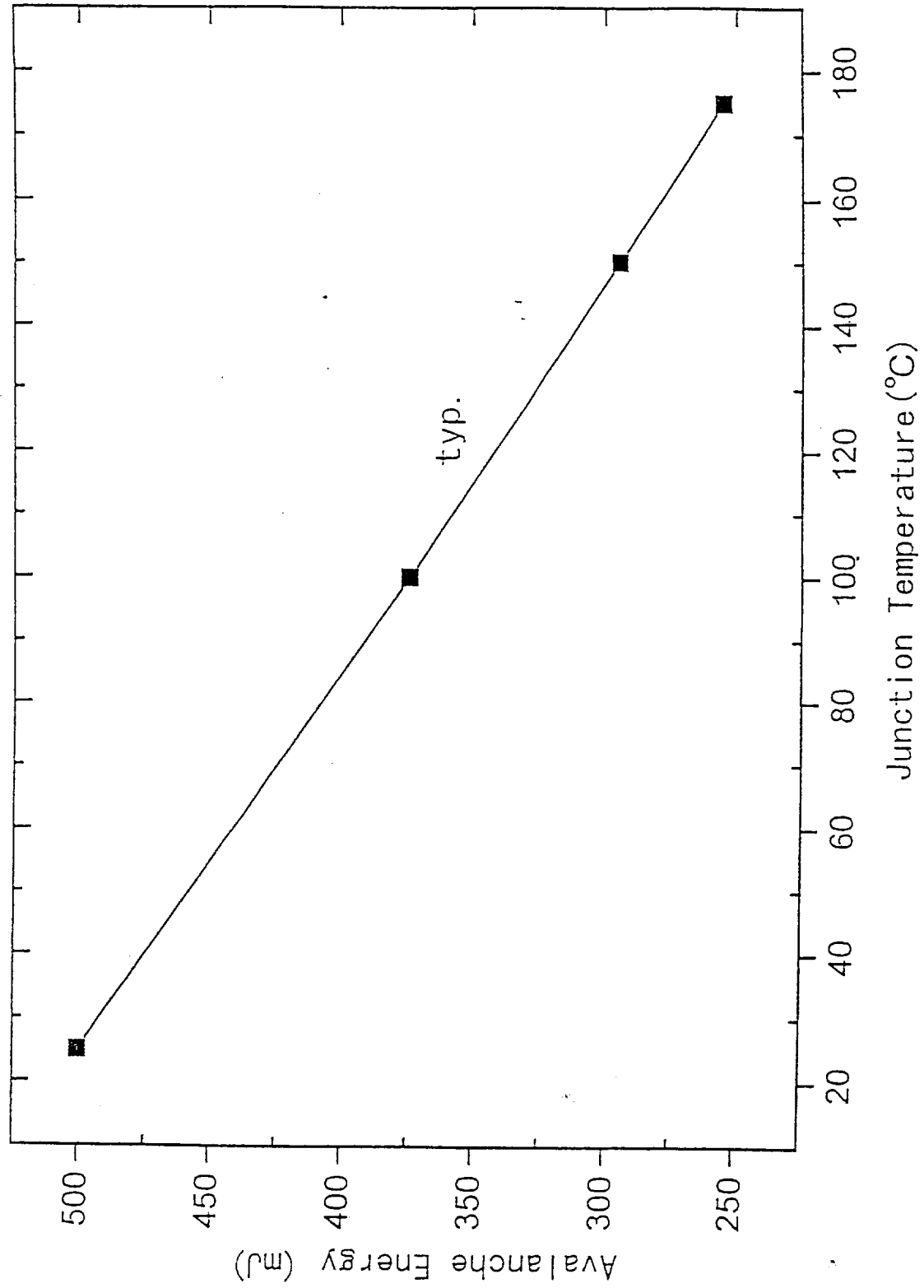
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Single Pulse Collector Emitter Avalanche Energy



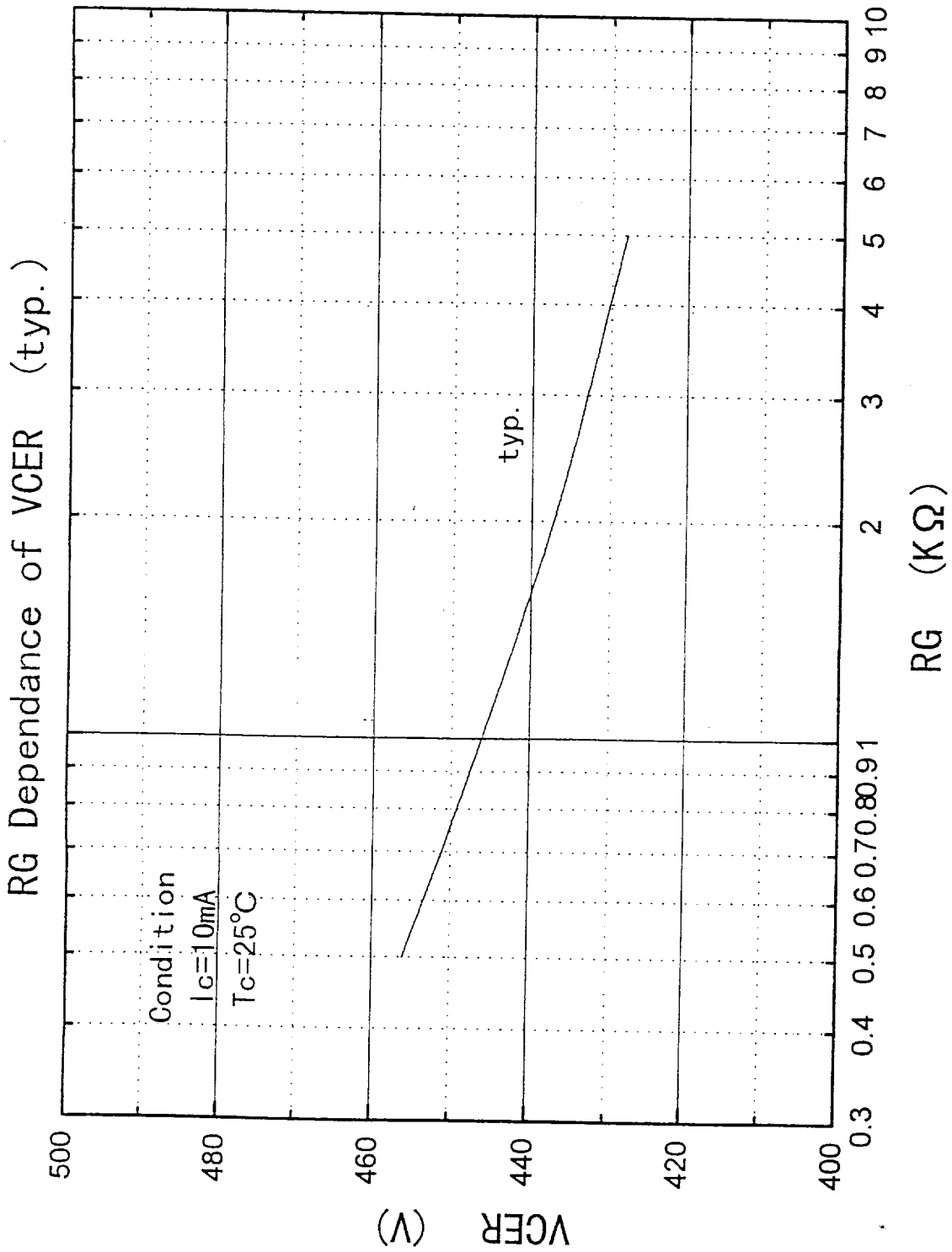
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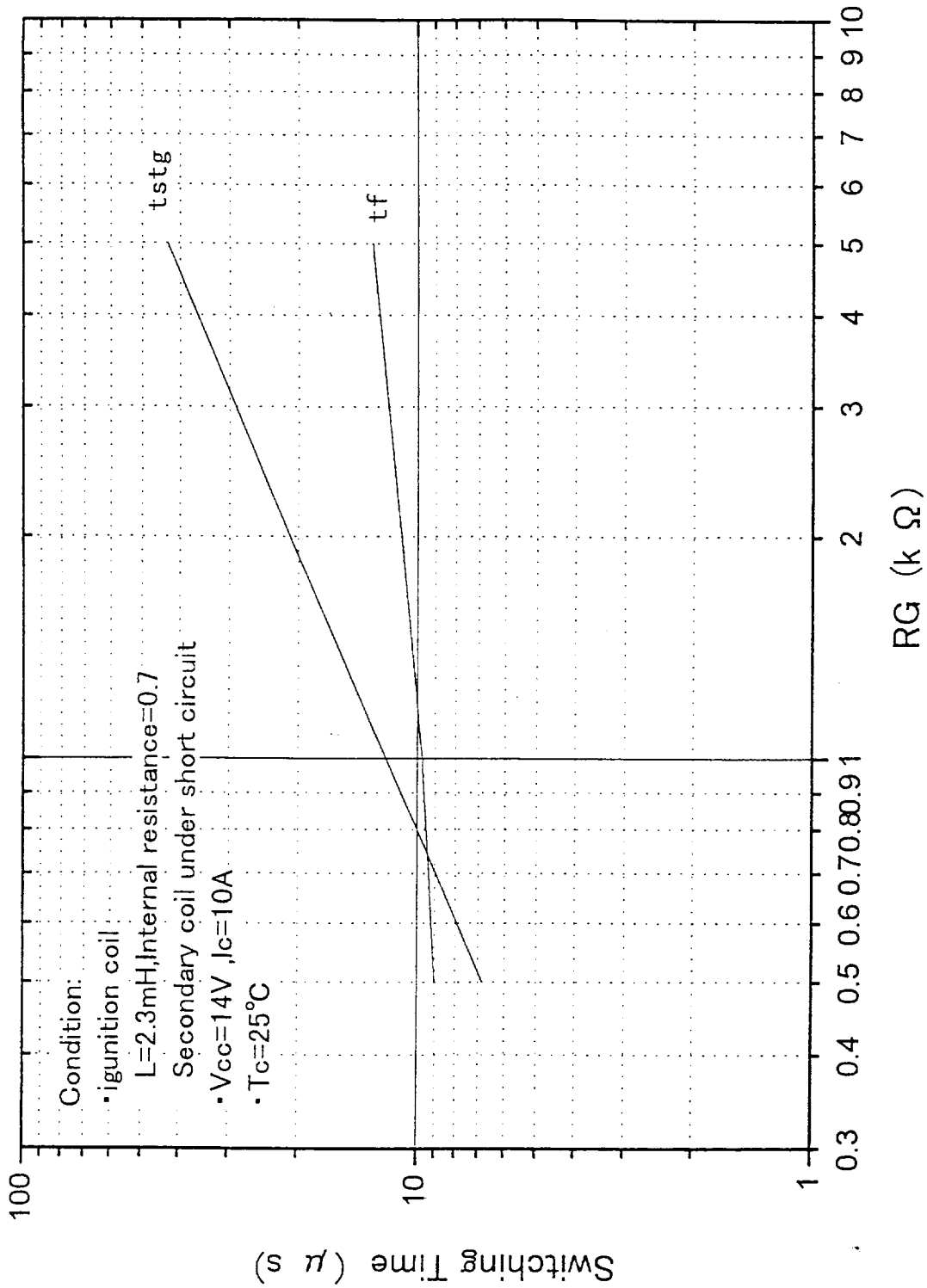
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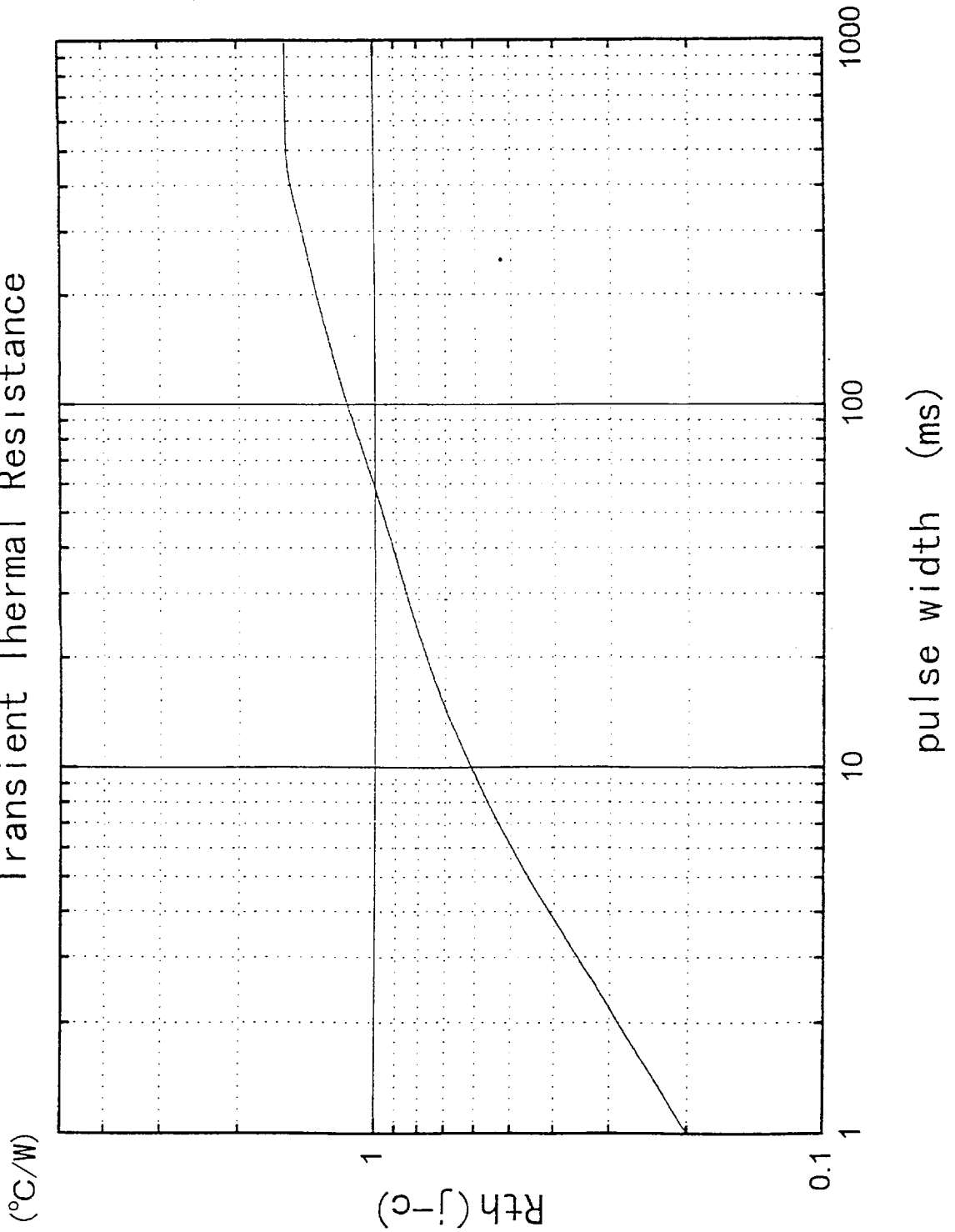
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RGE Dependence of Switching Time (typ.)



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Transient Thermal Resistance



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