

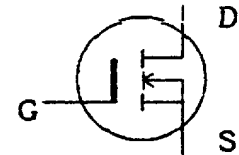
1. Scope

48E D ■ 2238792 0001822 952 ■ COL

This specifies Fuji power MOSFET 2SK1512

2. Outline

- I) Construction N-channel enhancement mode power MOSFET
 II) Application for switching
 III) Outview TO-3P (MK5C25623)

3. Absolute maximum ratings at $T_c=25^\circ\text{C}$ (unless otherwise specified)

Description	Symbol	Characteristics	Unit	Remarks
Drain-source voltage	V_{DS}	900	V	
Drain-gate voltage	V_{DGR}	900	V	$R_{GS}=20\text{K}\Omega$
Continuous Drain current	I_D	10	A	
Pulsed drain current	I_{DPulse}	30	A	
Gate-source voltage	V_{GS}	± 30	V	
Maximum power dissipation	P_D	150	W	
Operating and storage temperature range	T_{ch}	150	$^\circ\text{C}$	
	T_{stg}	$-55 \sim +150$	$^\circ\text{C}$	

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

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Drain-source breakdown voltage	$B V_{DSS}$	$I_D = 1\text{mA}$ $V_{GS} = 0\text{V}$	900			V
Gate threshold voltage	$V_{GS(th)}$	$I_D = 1\text{mA}$ $V_{DS} = V_{GS}$	2.5	3.5	5.0	V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 900\text{V}$ $T_{ch} = 25^\circ\text{C}$		10	500	μA
	I_{DSS}	$V_{GS} = 0\text{V}$ $T_{ch} = 125^\circ\text{C}$		0.2	1.0	mA
Gate-source leakage current	I_{GSS}	$V_{GS} = \pm 30\text{V}$ $V_{DS} = 0\text{V}$		10	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$I_D = 5\text{A}$ $V_{GS} = 10\text{V}$		1.0	1.2	Ω

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REVISIONS	DATE	NAME	APPROVED	Fuji Electric Co., Ltd.	DWG. NO.	MT5F1797	1/15	
	DRAWN	Aug. 20 '90	T. SHIOTANI					
	CHECKED	Aug. 21 '90	T. Orai					
		Aug. 21 '90	S. Furukawa					

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Dynamic ratings

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COLLMER SEMICONDUCTOR INC

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Forward transconductance	g_{fs}	$I_D = 5A$ $V_{DS} = 25V$	3.0	6.0		S
Input capacitance	C_{iss}	$V_{DS} = 25V$ $V_{GS} = 0V$ $f = 1MHz$		1500	2250	pF
Output capacitance	C_{oss}			200	300	pF
Reverse transfer capacitance	C_{rss}			100	150	pF
Turn-on time	$t_{d(on)}$	$V_{CC} = 600V$ $V_{GS} = 10V$ $I_D = 10A$ $R_{GS} = 25\Omega$		40	60	ns
	t_r			120	180	ns
Turn-off time	$t_{d(off)}$			240	360	ns
	t_f			110	165	ns

Reverse diode

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Continuous reverse drain current	I_{DR}	$T_C = 25^\circ C$			10	A
Pulsed reverse drain current	I_{DRM}	$T_C = 25^\circ C$			30	A
Diode forward on-voltage	V_{SD}	$I_F = 2 \times I_{DR}$ $V_{GS} = 0V, T_{CH} = 25^\circ C$		0.96	1.44	V
Reverse recovery time	t_{rr}	$I_F = I_{DR}$ $dI_F/dt = 100A/\mu S$ $T_{CH} = 25^\circ C$				ns
Reverse recovery charge	Q_{rr}					μC

5. Thermal resistance

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Thermal resistance	$R_{th_{ch-c}}$				0.83	$^\circ C/W$
	$R_{th_{ch-a}}$				35.0	$^\circ C/W$

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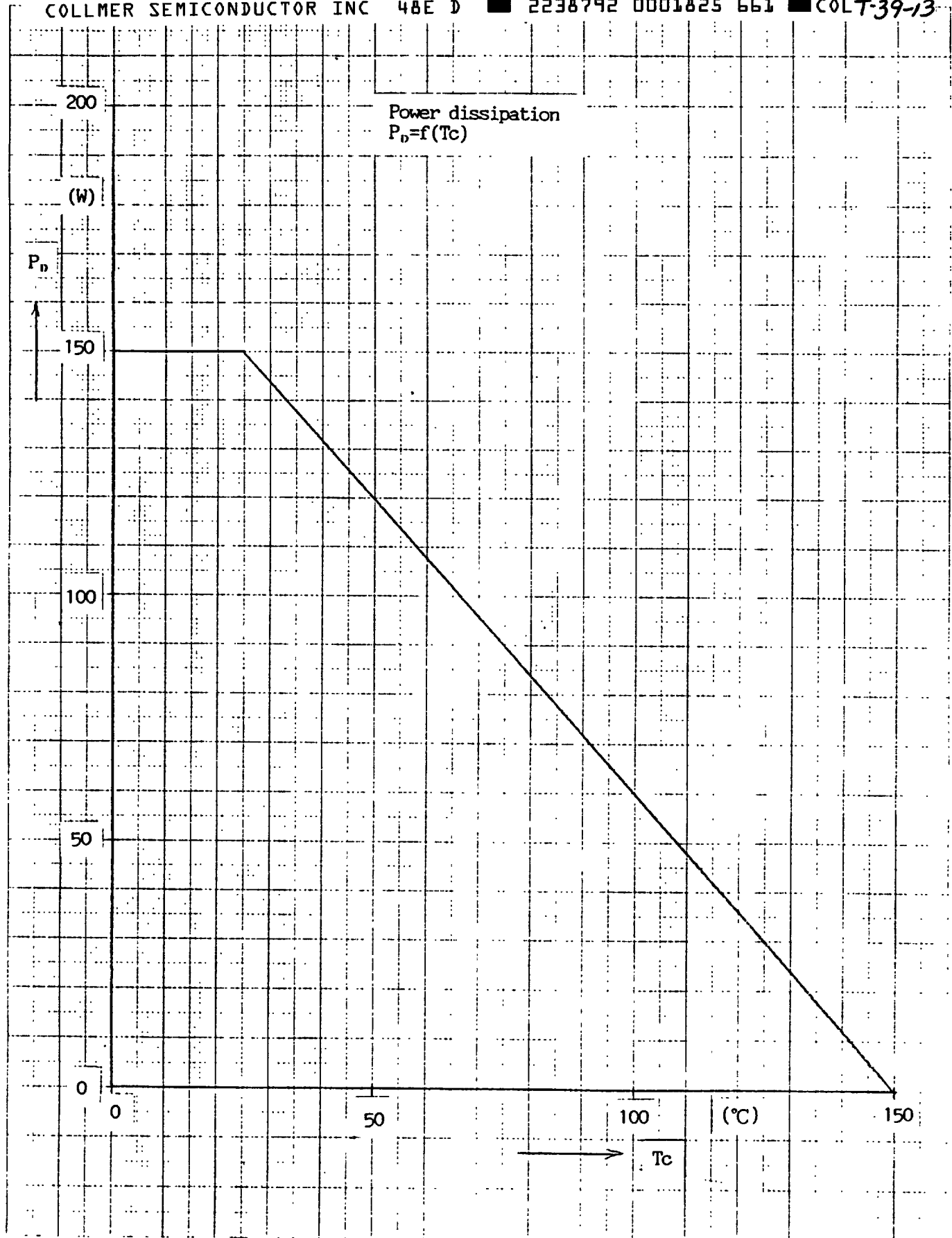
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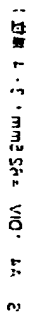
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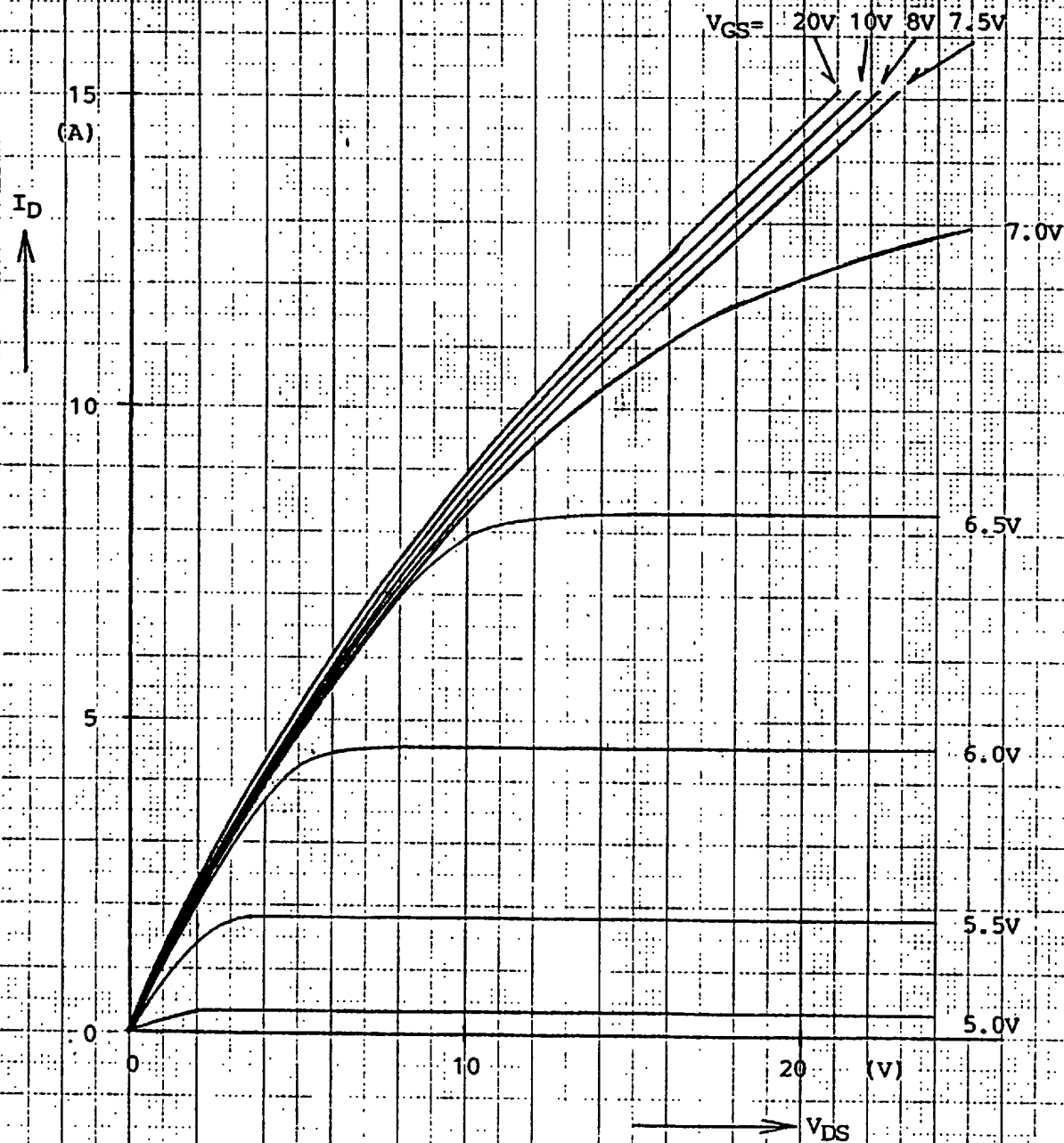
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Typical output characteristics
 $I_D = f(V_{DS})$: 80 μ s pulse test, $T_{ch} = 25^\circ\text{C}$

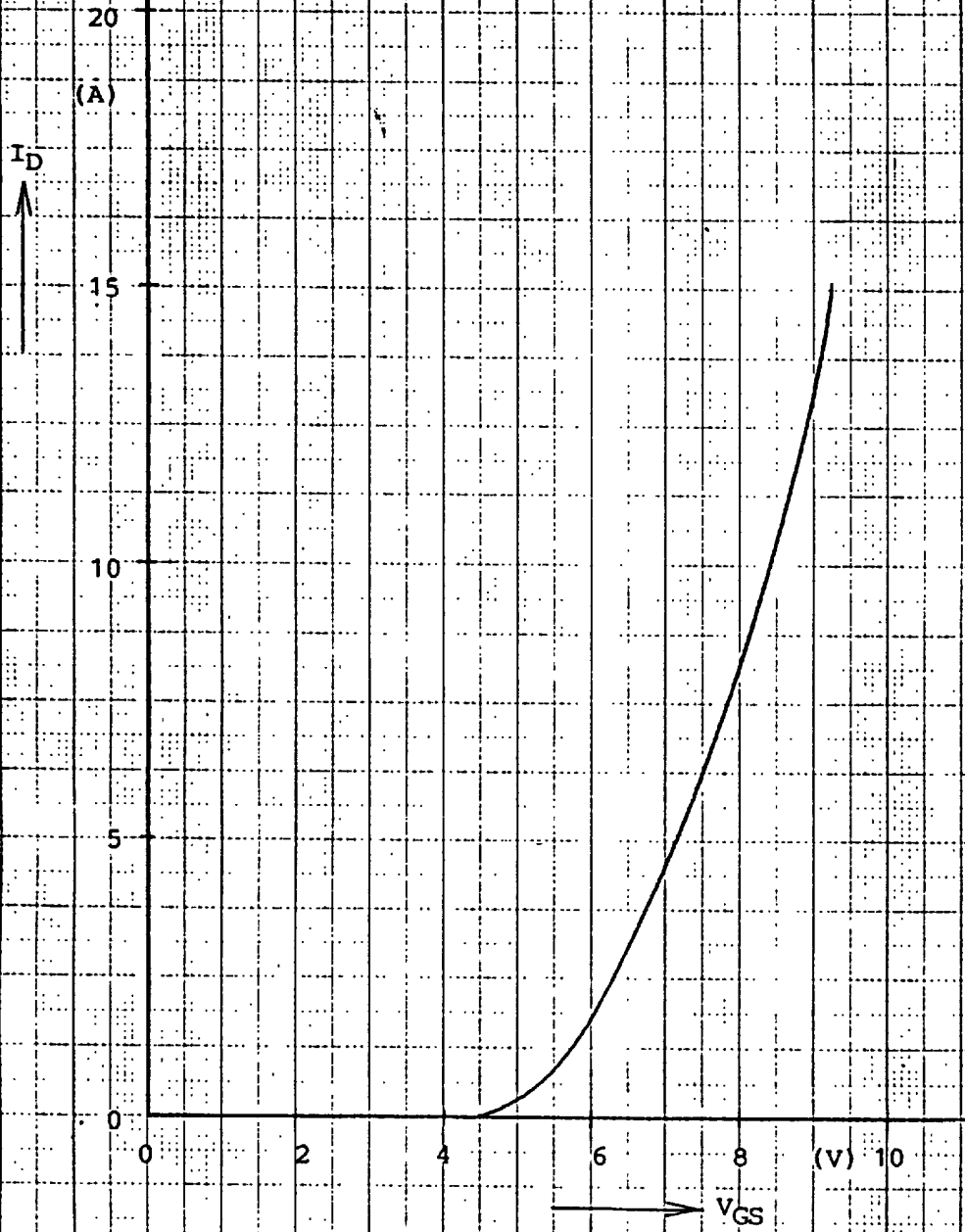


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Typical transfer characteristic
 $I_D = f(V_{GS})$: 80 μ s pulse test, $V_{DS} = 25V$, $T_{ch} = 25^\circ C$

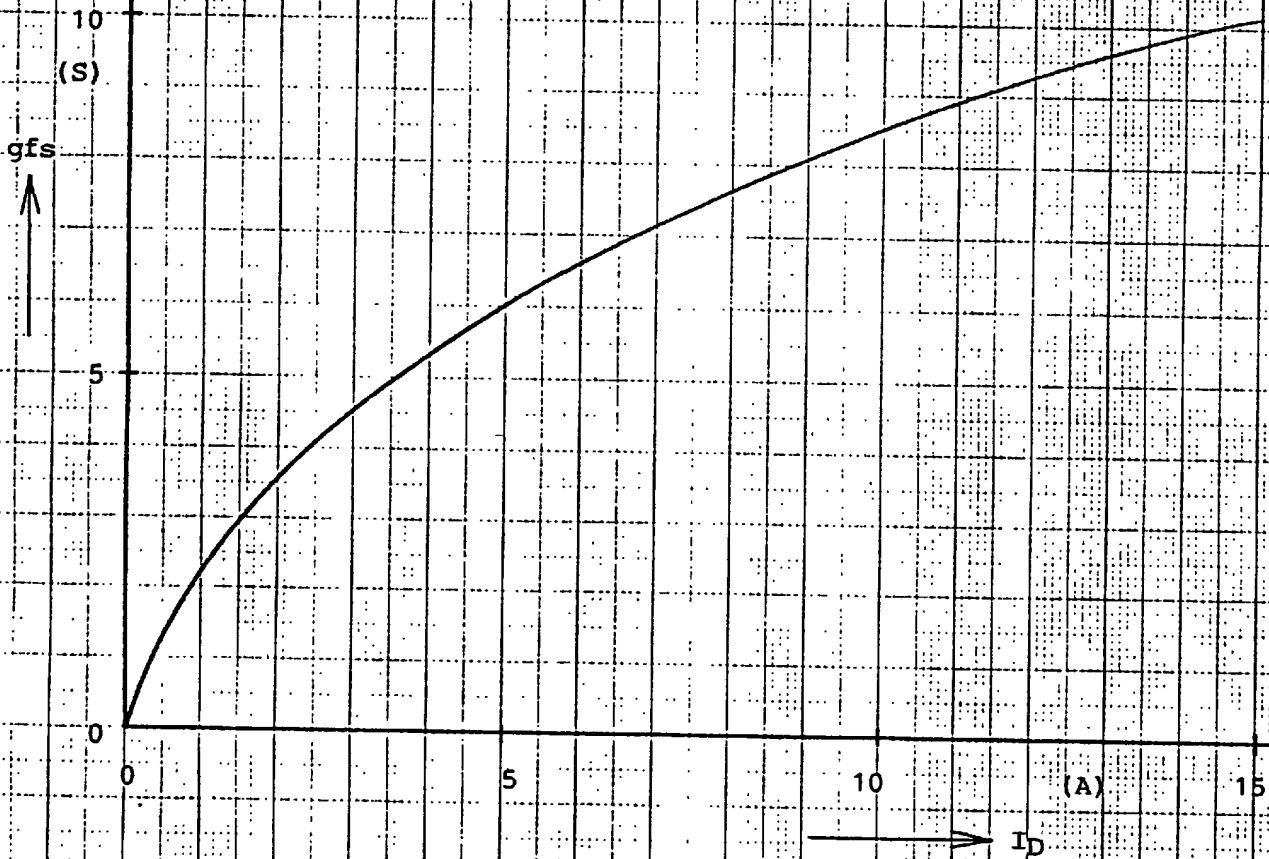


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Typical transconductance
 $g_{fs} = f(I_D)$: 80 μ s pulse test, $V_{DS} = 25V$

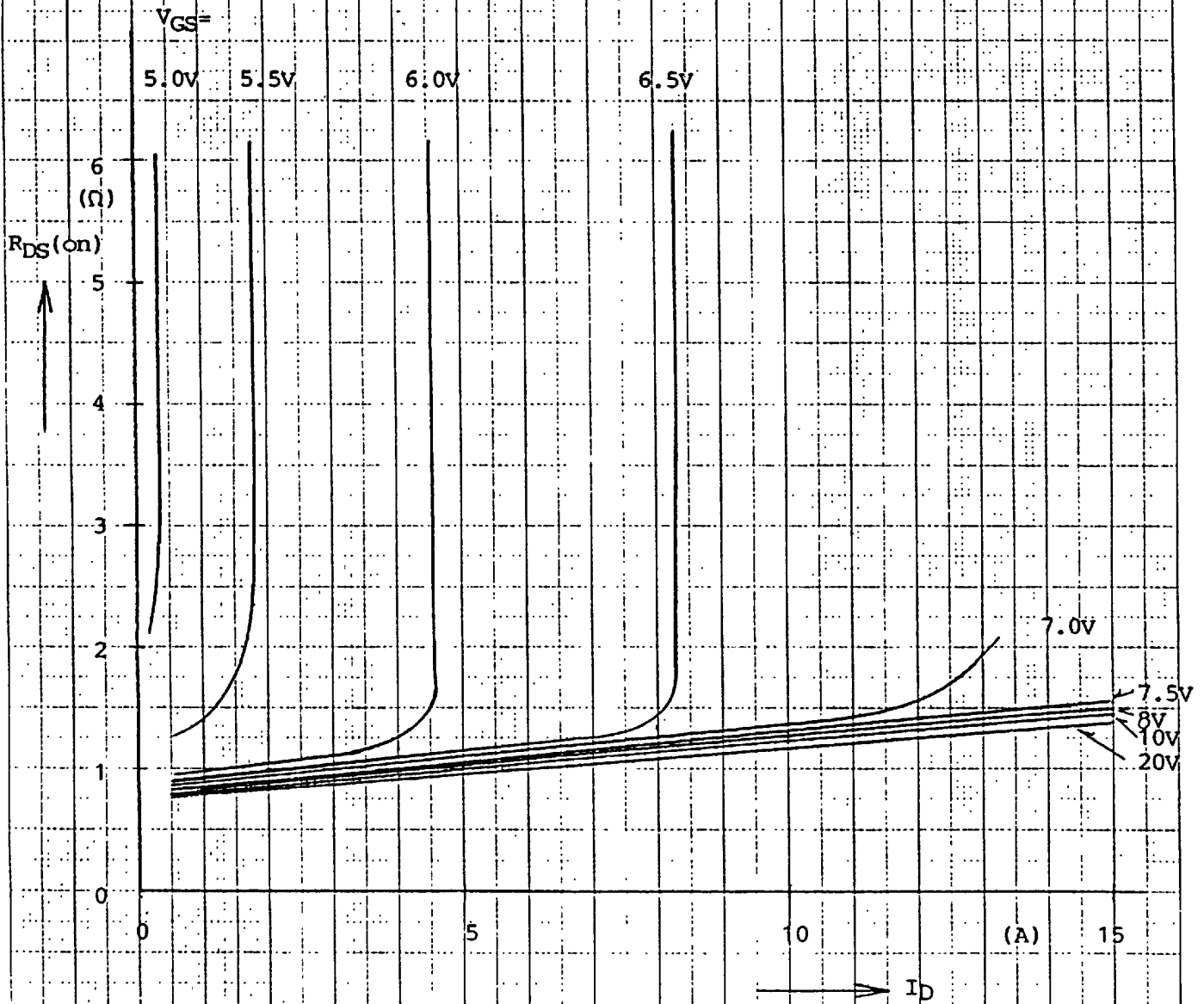


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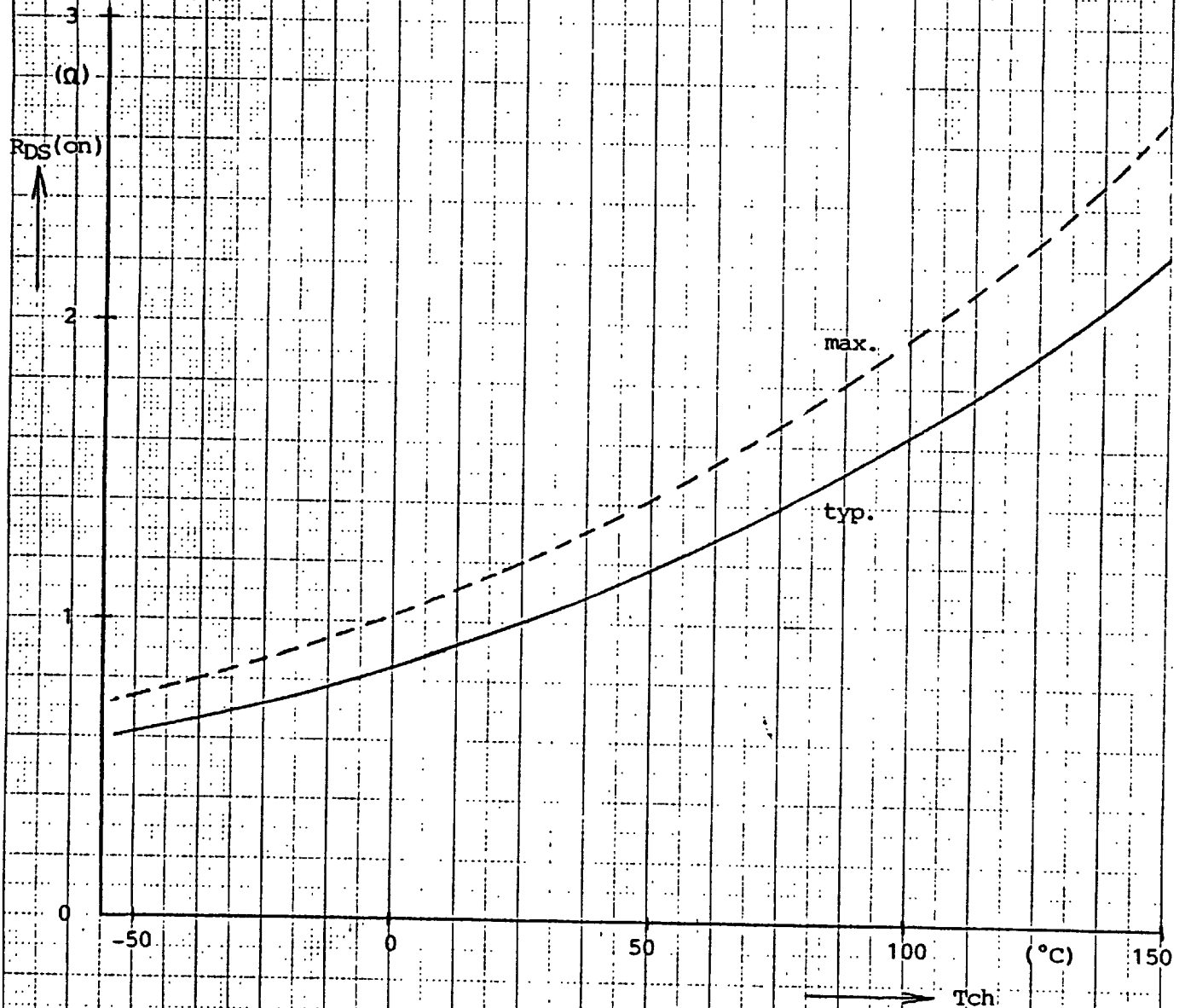
Typical drain-source on-state resistance
 $R_{DS(on)} = f(I_D, V_{GS}, T_{ch} = 25^\circ\text{C})$



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Drain-source on-state resistance
 $R_{DS(on)} = f(T_{ch}) : I_D = 2.5A, V_{GS} = 10V$



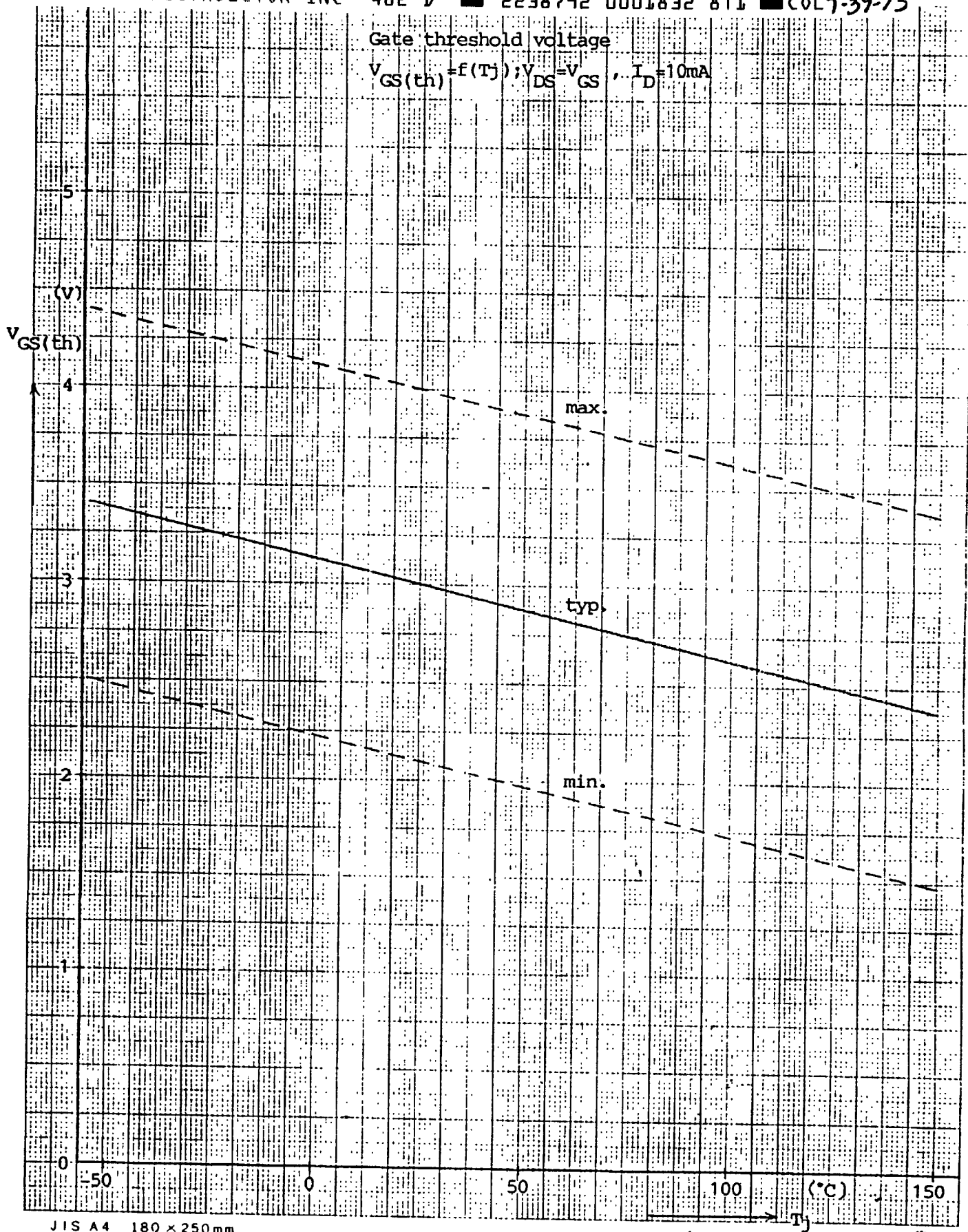
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Gate threshold voltage

$$V_{GS(th)} = f(T_j); V_{DS} = V_{GS}, I_D = 10mA$$



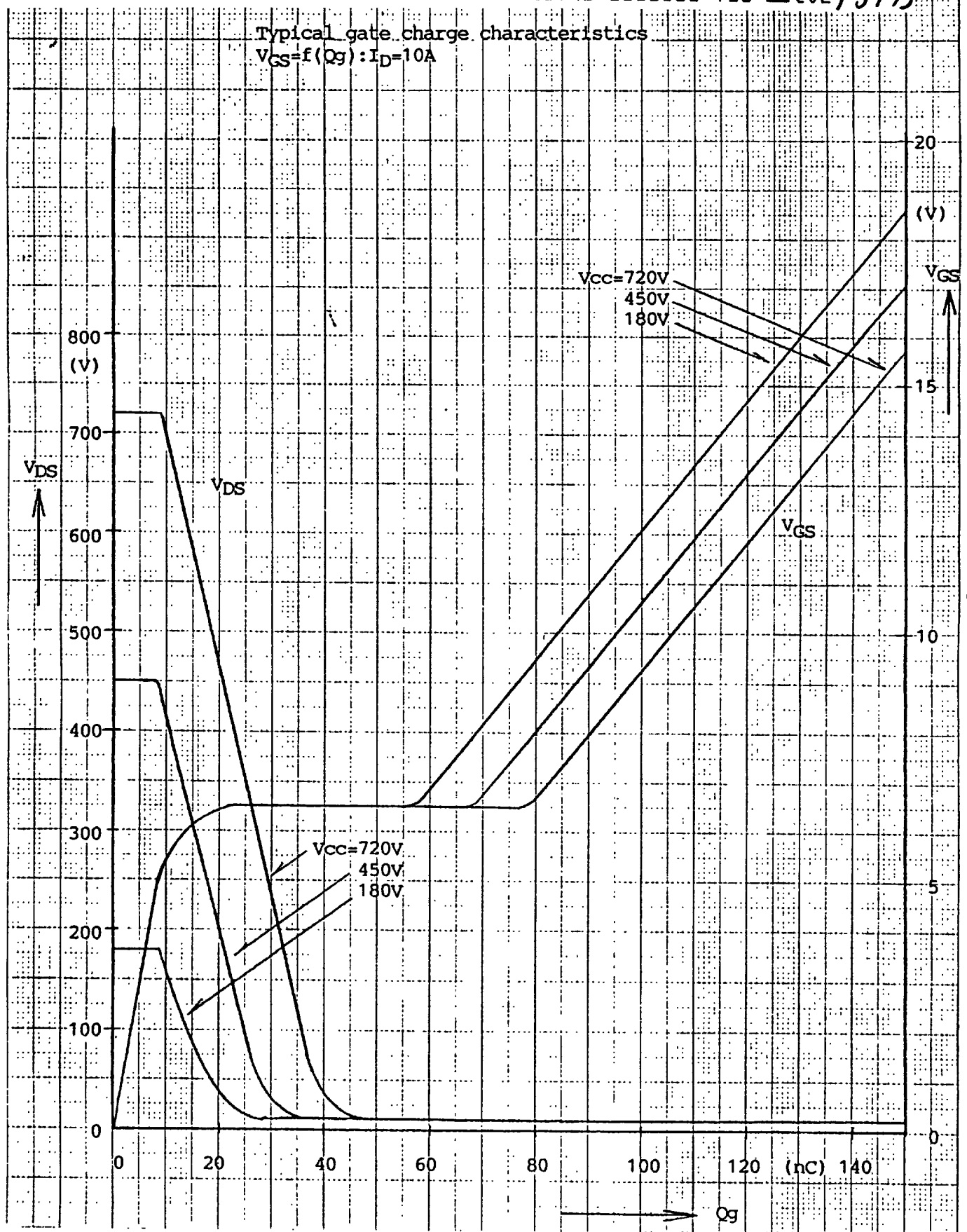
JIS A4 180 × 250mm

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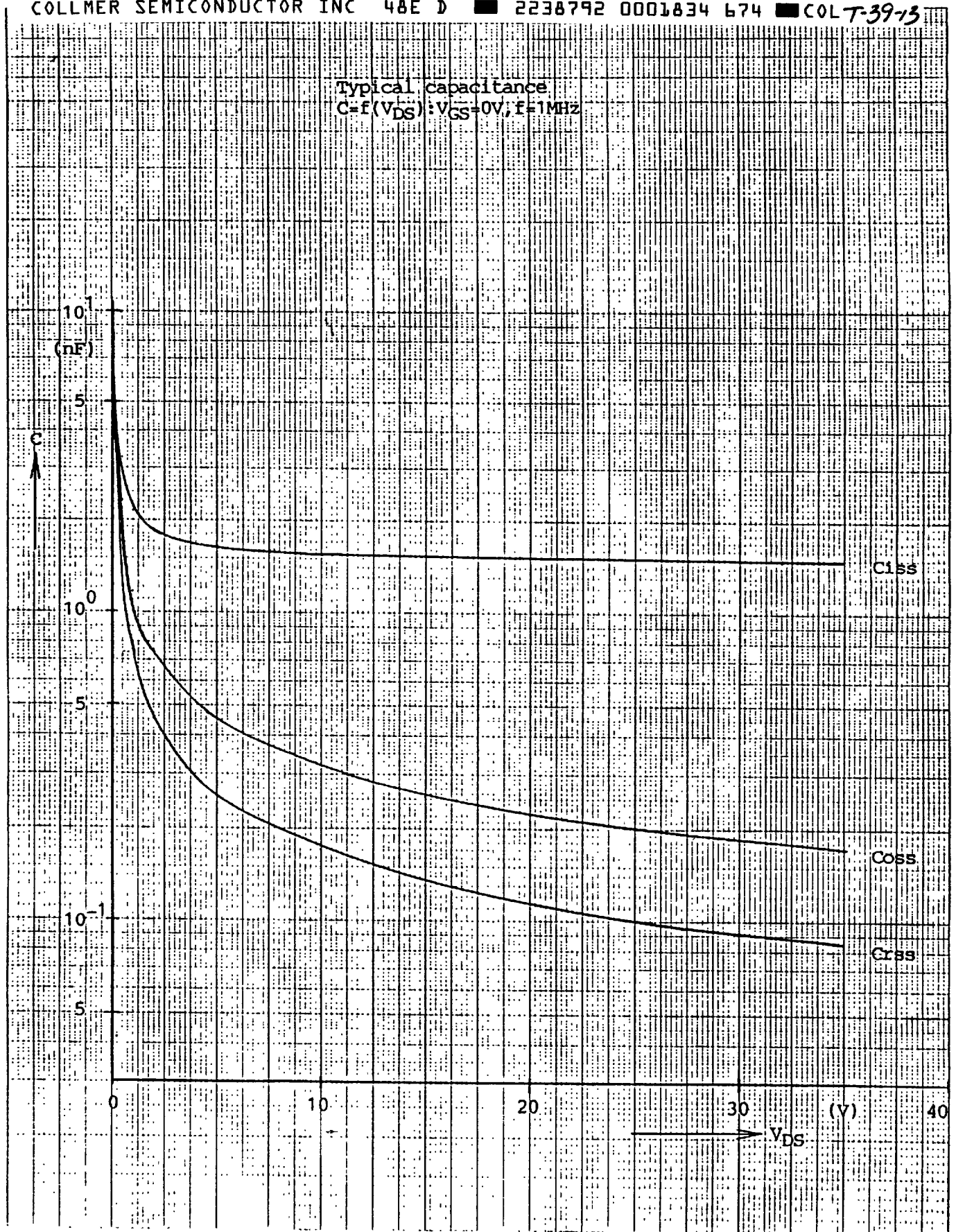
Typical gate charge characteristics
 $V_{GS} = f(Q_g) : I_D = 10A$



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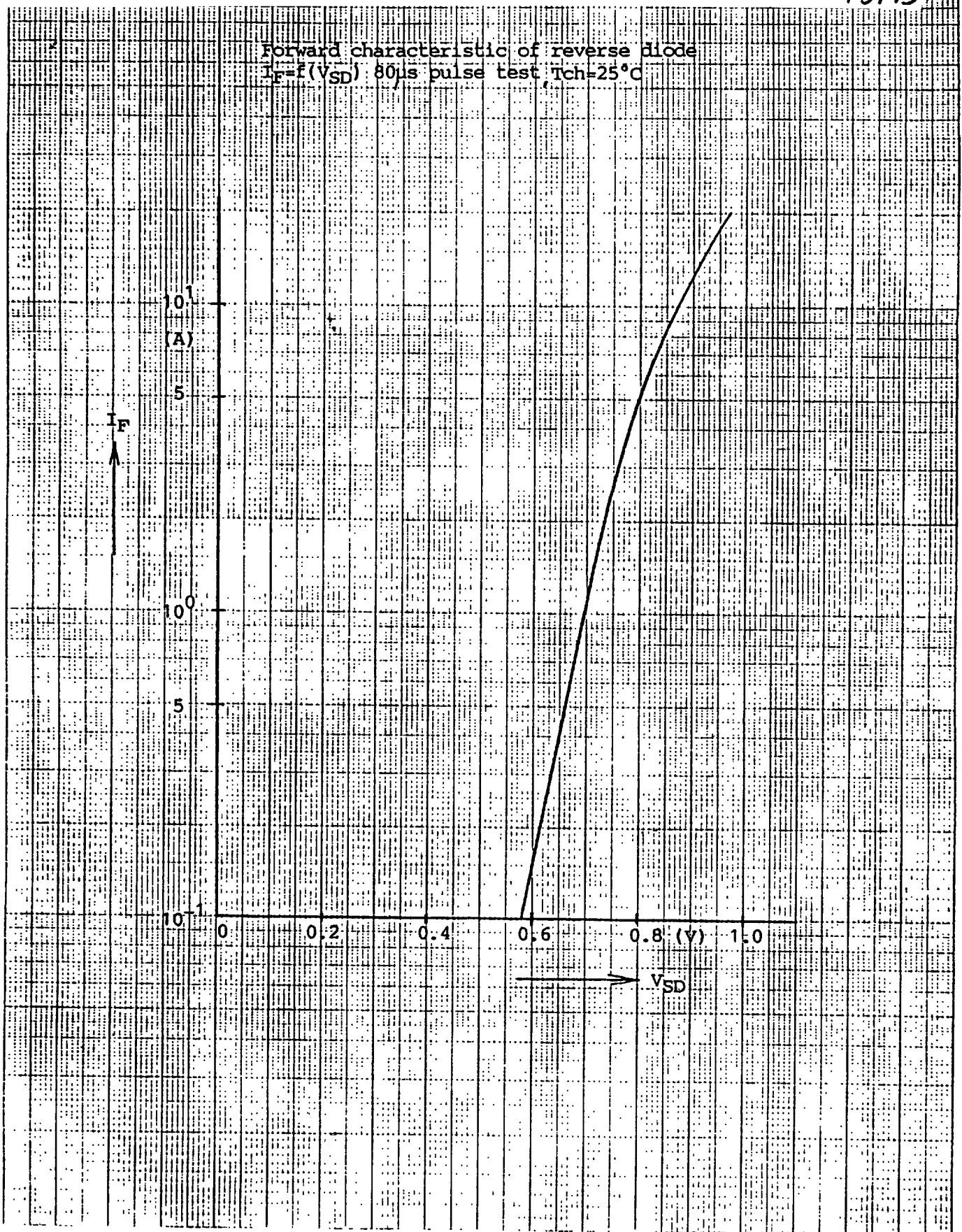


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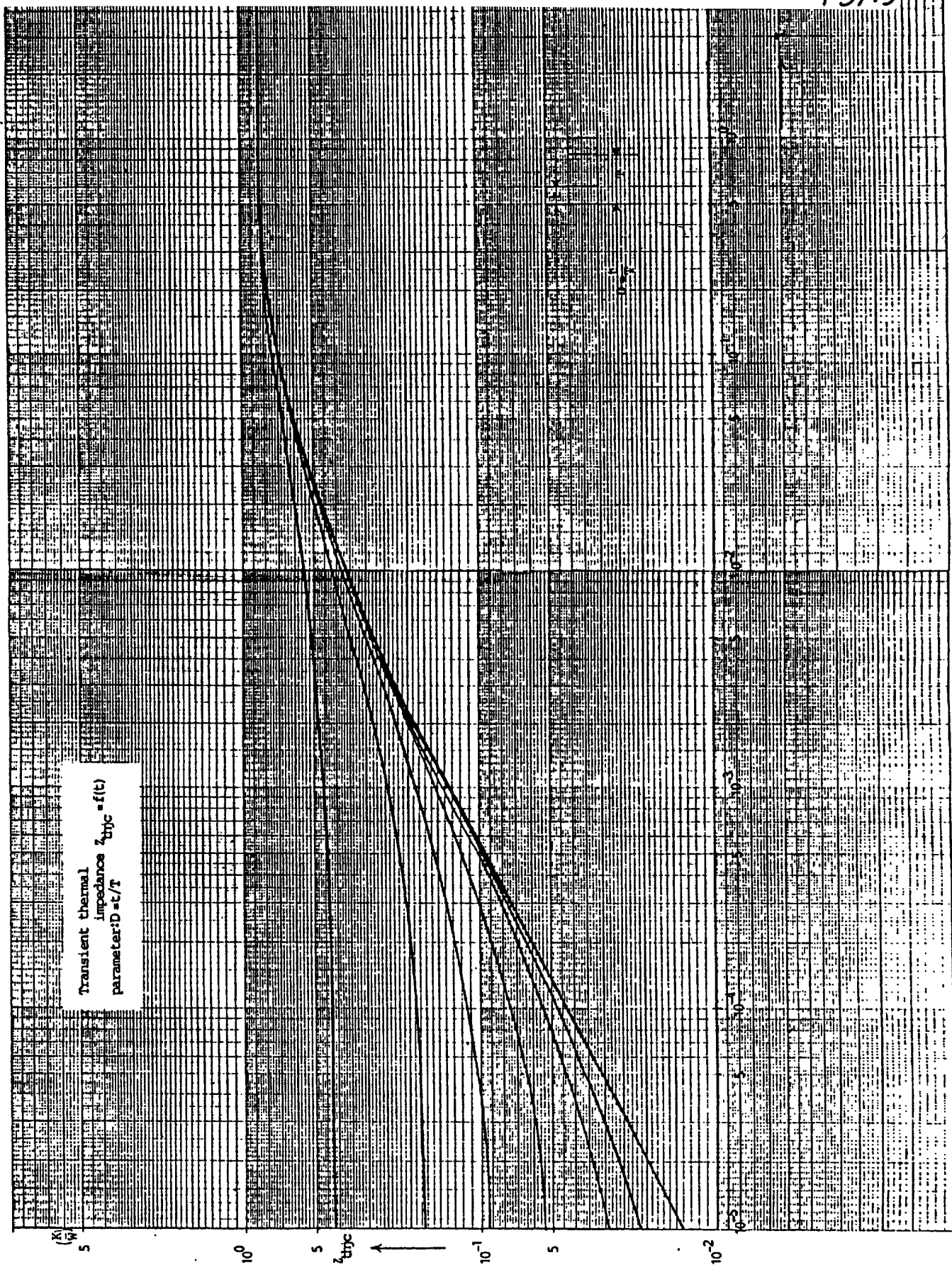
Forward characteristic of reverse diode
 $I_F = f(V_{SD})$ 80 μ s pulse test, $T_{ch} = 25^\circ\text{C}$



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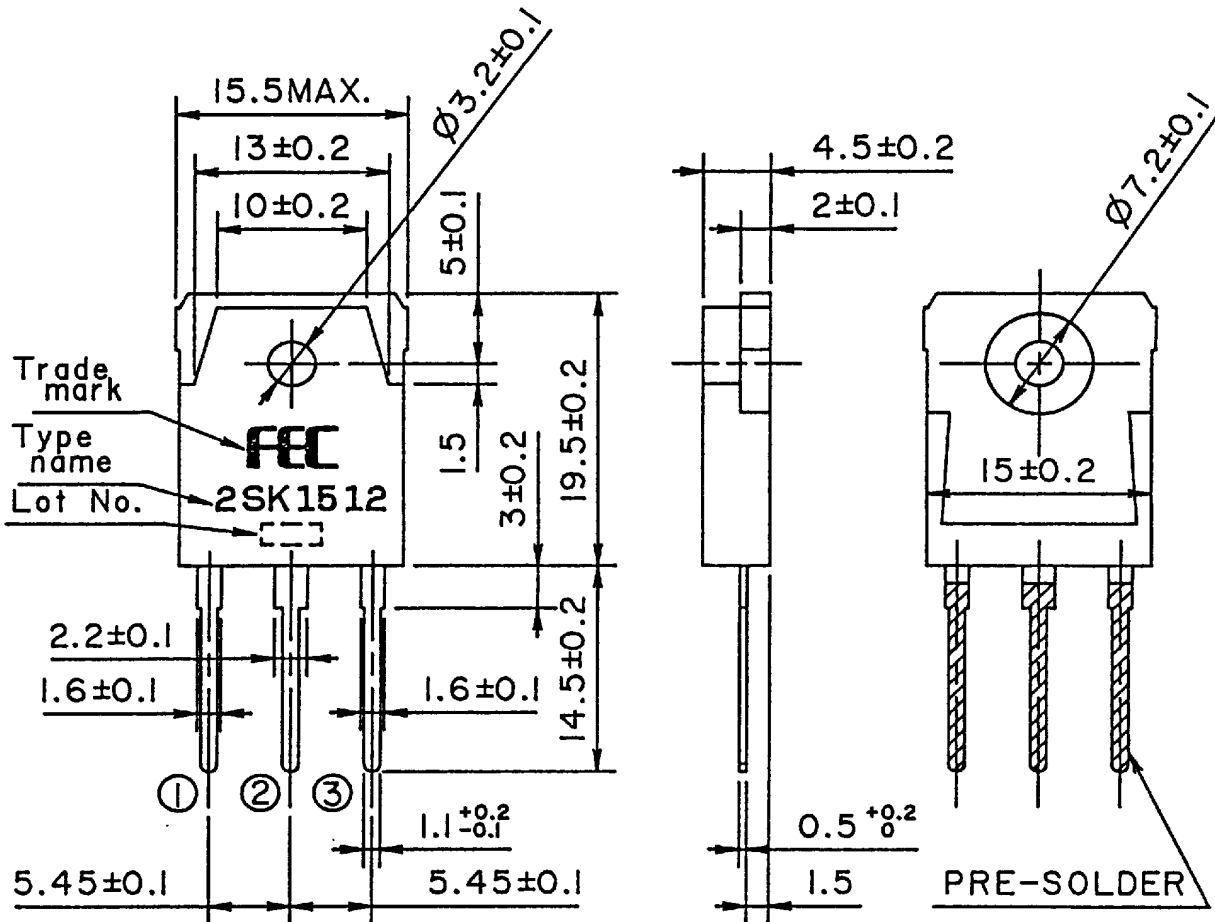


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TYPE : 2SK1512



DIMENSIONS ARE IN MILLIMETERS.

CONNECTION

- ① GATE
- ② DRAIN
- ③ SOURCE

JEDEC : TO-228AA

EIAJ : SC-65

MS.T03P.2SK1512 -E

Fuji Electric Co.,Ltd.

	DATE	NAME	APPROVED
DRAWN	1990-05-26	MARUYAMA	M.
CHECKED	1990-05-26	ARA	Miyagi

REVISIONS

DWG. NO.

MK5C25624

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