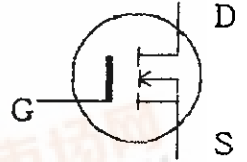


Fuji power MOSFET Specification

2SK1016

1. Scope
This specifies Fuji power MOSFET 2SK1016

2. Outline
I) Construction N-channel enhancement mode power MOSFET
II) Application for switching
III) Outview TO-3P



3. Absolute maximum ratings at Tc=25 °C (unless otherwise specified)

Description	Symbol	Characteristics	Unit	Remarks
Drain-source voltage	V_{DS}	500	V	
Drain-gate voltage	V_{DGR}	500	V	$R_{GS} = 20 K\Omega$
Continuous Drain current	I_D	15	A	
Pulsed drain current	I_{Dpulse}	40	A	
Gate-source voltage	V_{GS}	± 30	V	
Maximum power dissipation	P_D	125	W	
Operating and storage temperature range	T_j	150	°C	
	T_{stg}	-55 ~ +150	°C	

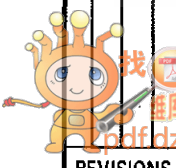
4. Electrical characteristics at Tc=25°C (unless otherwise specified)
Static ratings

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Drain-source breakdown voltage	BV_{DSS}	$I_D = 1mA$ $V_{GS} = 0V$	500			V
Gate threshold voltage	$V_{GS(th)}$	$I_D = 1mA$ $V_{DS} = V_{GS}$	2.5	3.5	5.0	V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 500V$ $V_{GS} = 0V$ $T_j = 25^\circ C$		10	500	μA
	I_{DSS}			0.2	1.0	mA
Gate-source leakage current	I_{GSS}	$V_{GS} = \pm 30V$ $V_{DS} = 0V$		10	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$I_D = 8A$ $V_{GS} = 10V$		0.36	0.55	Ω

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DATE	NAME	APPROVED
Nov. 21 '89	N. Fujisawa	
CHECKED	Nov. 21 '89 S. Furukata	

Fuji Electric Co., Ltd.	
WG.NO.	MT5F1306



Dynamic ratings

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Forward transconductance	g_{fs}	$I_D = 8A$ $V_{DS} = 25V$	5.0	10.0		S
Input capacitance	C_{iss}	$V_{DS} = 25V$ $V_{GS} = 0V$ $f = 1MHz$		1800	2700	pF
Output capacitance	C_{oss}			270	410	pF
Reverse transfer capacitance	C_{rss}			120	185	pF
Turn-on time	$t_d(ON)$	$V_{CC} = 300V$ $V_{GS} = 10V$ $I_D = 15A$ $R_{GS} = 25\Omega$		70	110	ns
	t_r			100	150	ns
Turn-off time	$t_d(OFF)$			250	380	ns
	t_f			80	120	ns

Reverse diode

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Continuous reverse drain current	I_{DR}				15	A
Pulsed reverse drain current	I_{DRM}				40	A
Diode forward on-voltage	V_{SD}	$I_F = 2 \times I_{DR}$ $V_{GS} = 0V, T_j = 25^\circ C$		1.1	1.65	V
Reverse recovery time	t_{rr}	$I_F = I_{DR}$ $V_{GS} = 0V$ $-dI_F/dt = 100A/\mu s$ $T_j = 25^\circ C$		400		ns
Reverse recovery charge	Q_{rr}				4	μC

5. Thermal resistance

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Thermal resistance	$R_{th j-c}$				1.0	$^\circ C/W$
	$R_{th j-a}$				35.0	$^\circ C/W$

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6. 御注意 (Attention)

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This product described in this specification contain strategic product subject to COCOM requirements. They should not be exported without authorization from the appropriate governmental authorities.

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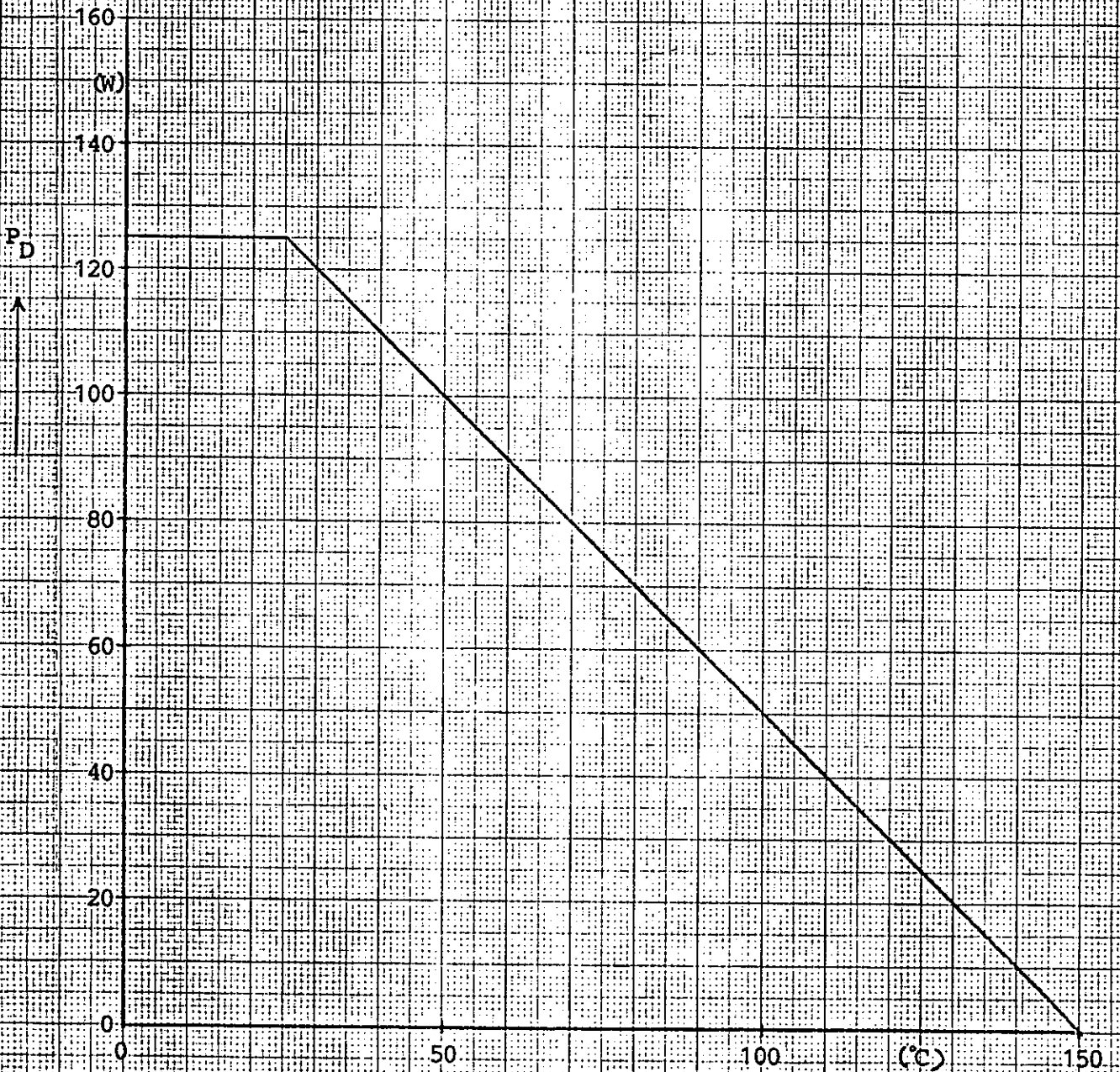
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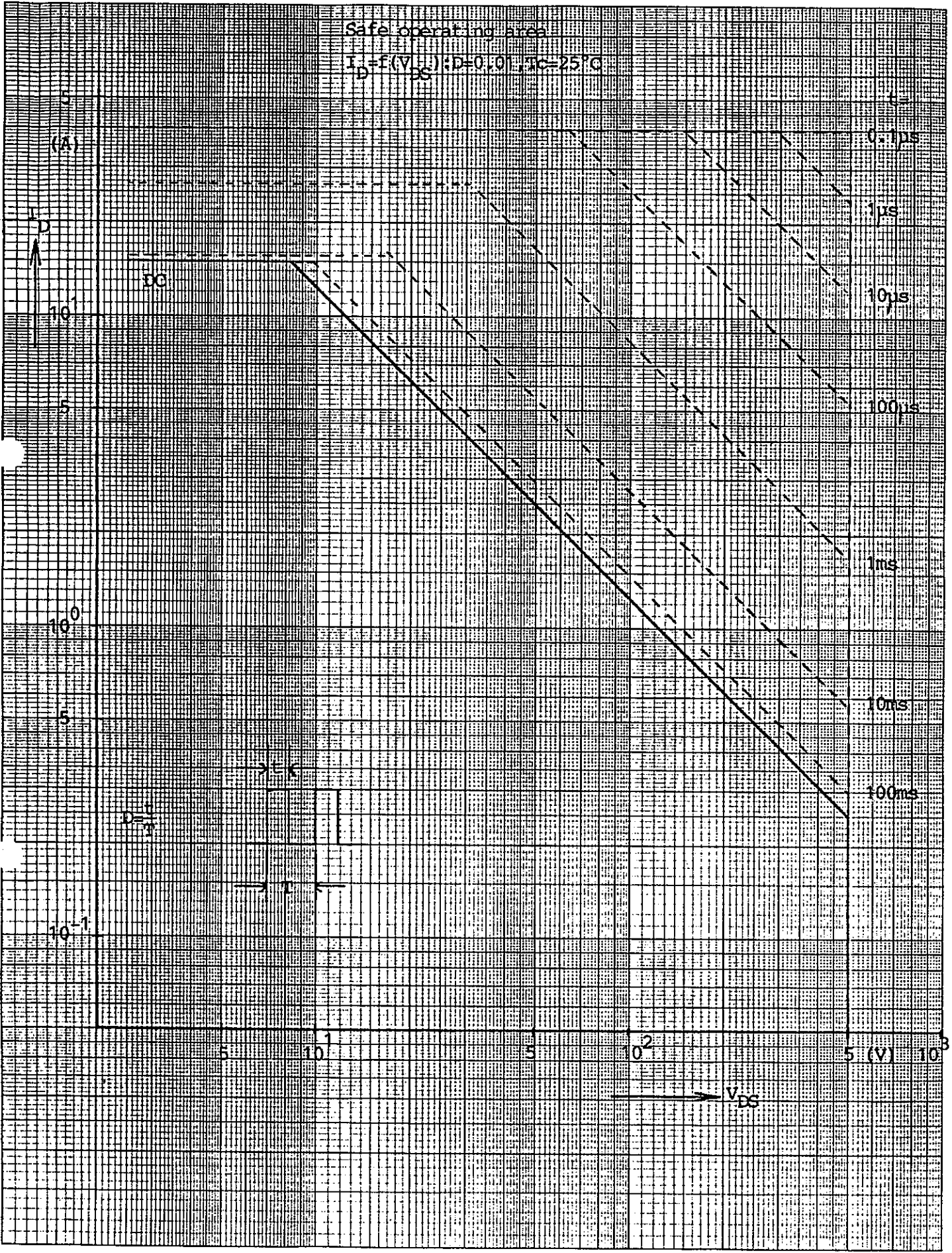
DWG. NO.

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Power dissipation

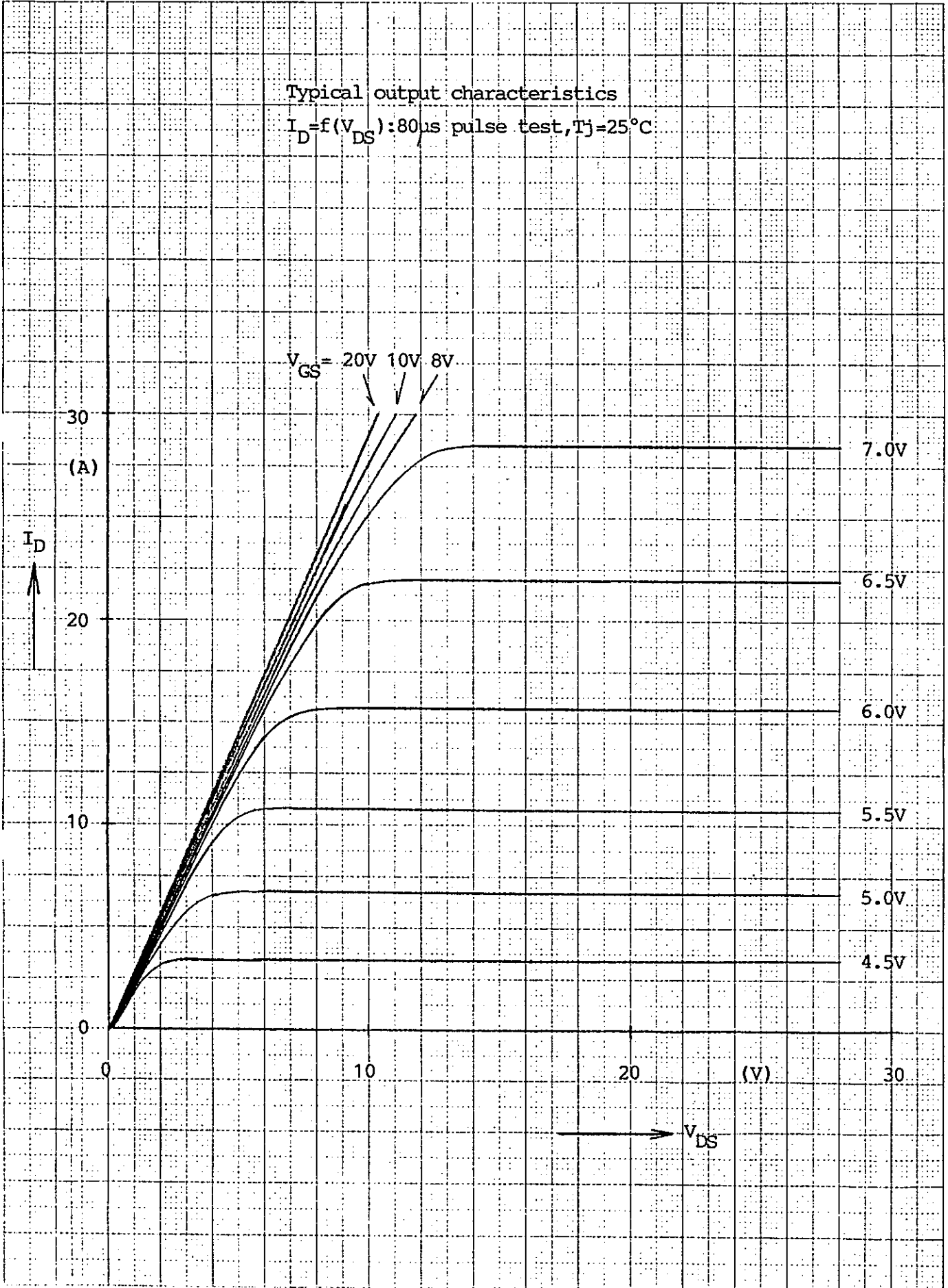
$$P_D = f(T_C)$$





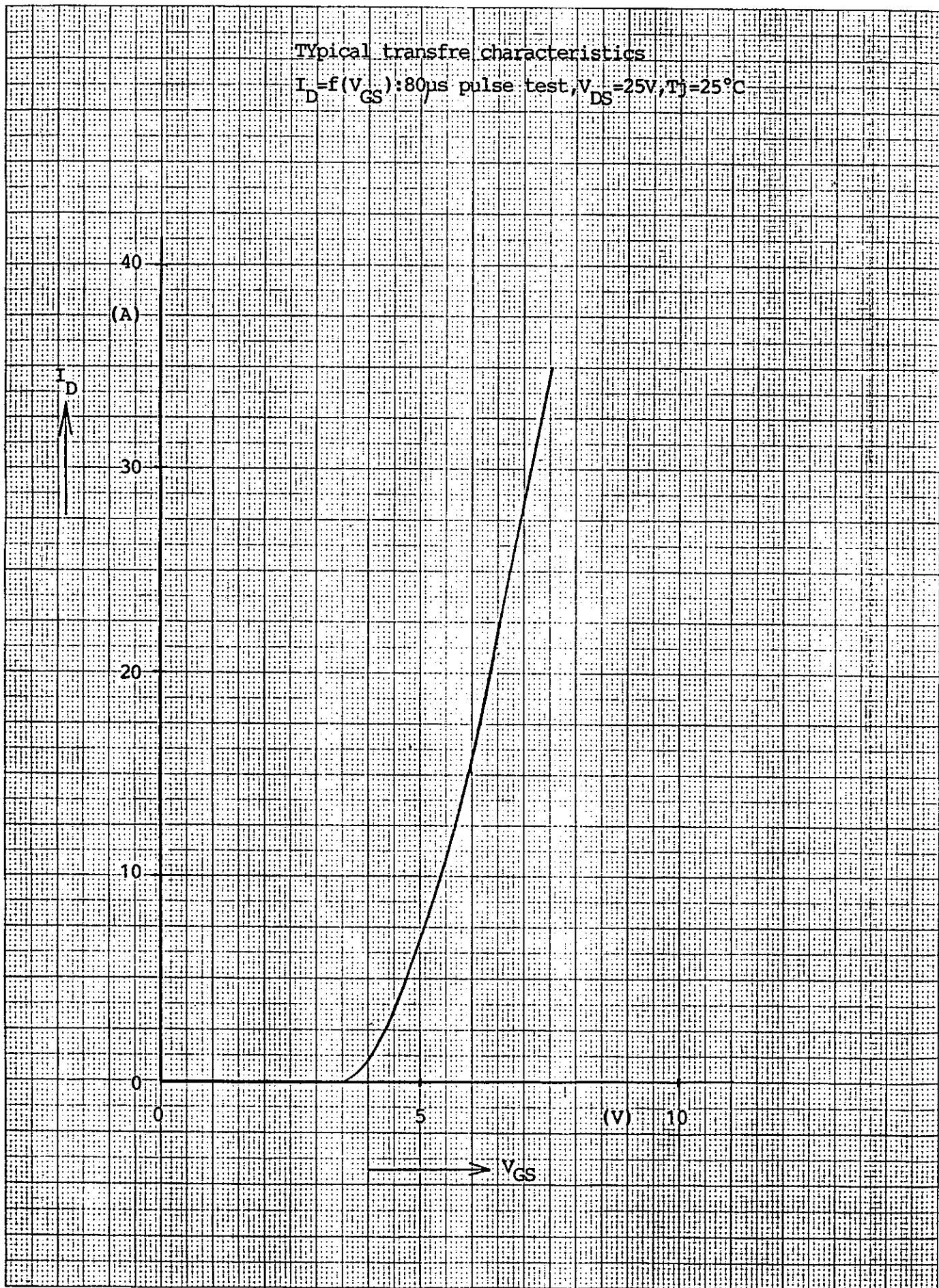
Typical output characteristics

$I_D = f(V_{DS})$: 80 μ s pulse test, $T_j = 25^\circ\text{C}$



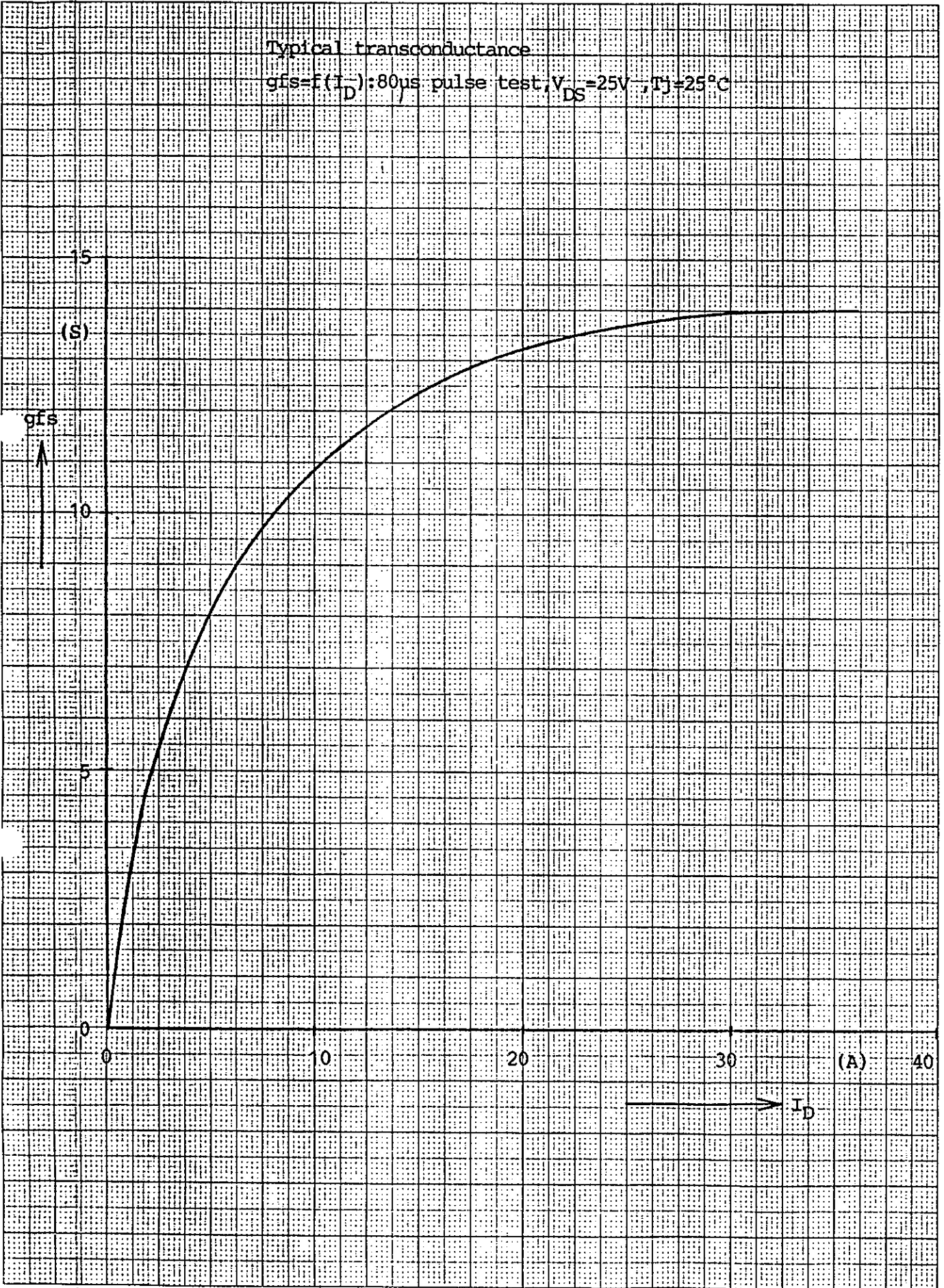
Typical transfre characteristics

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



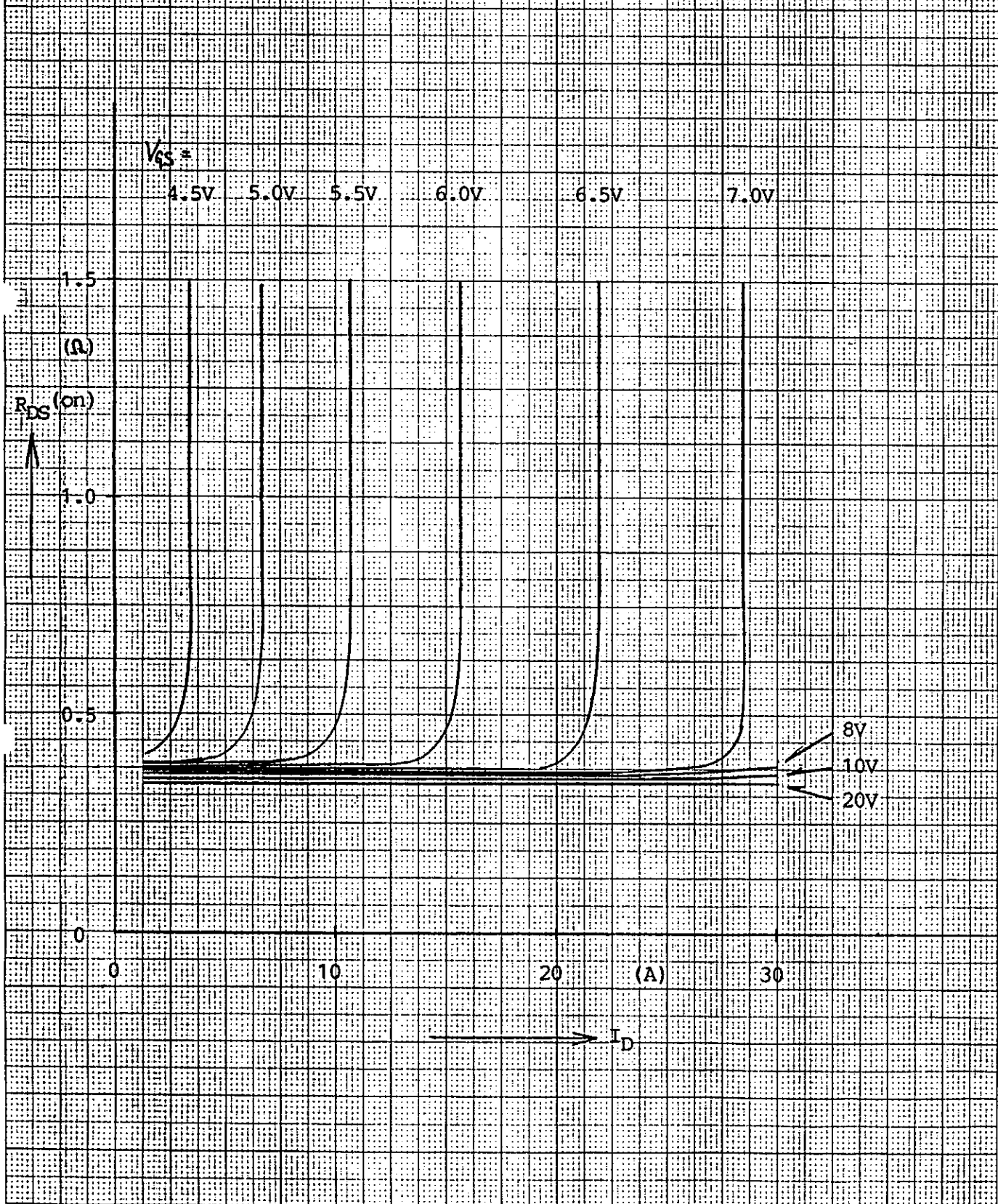
Typical transconductance

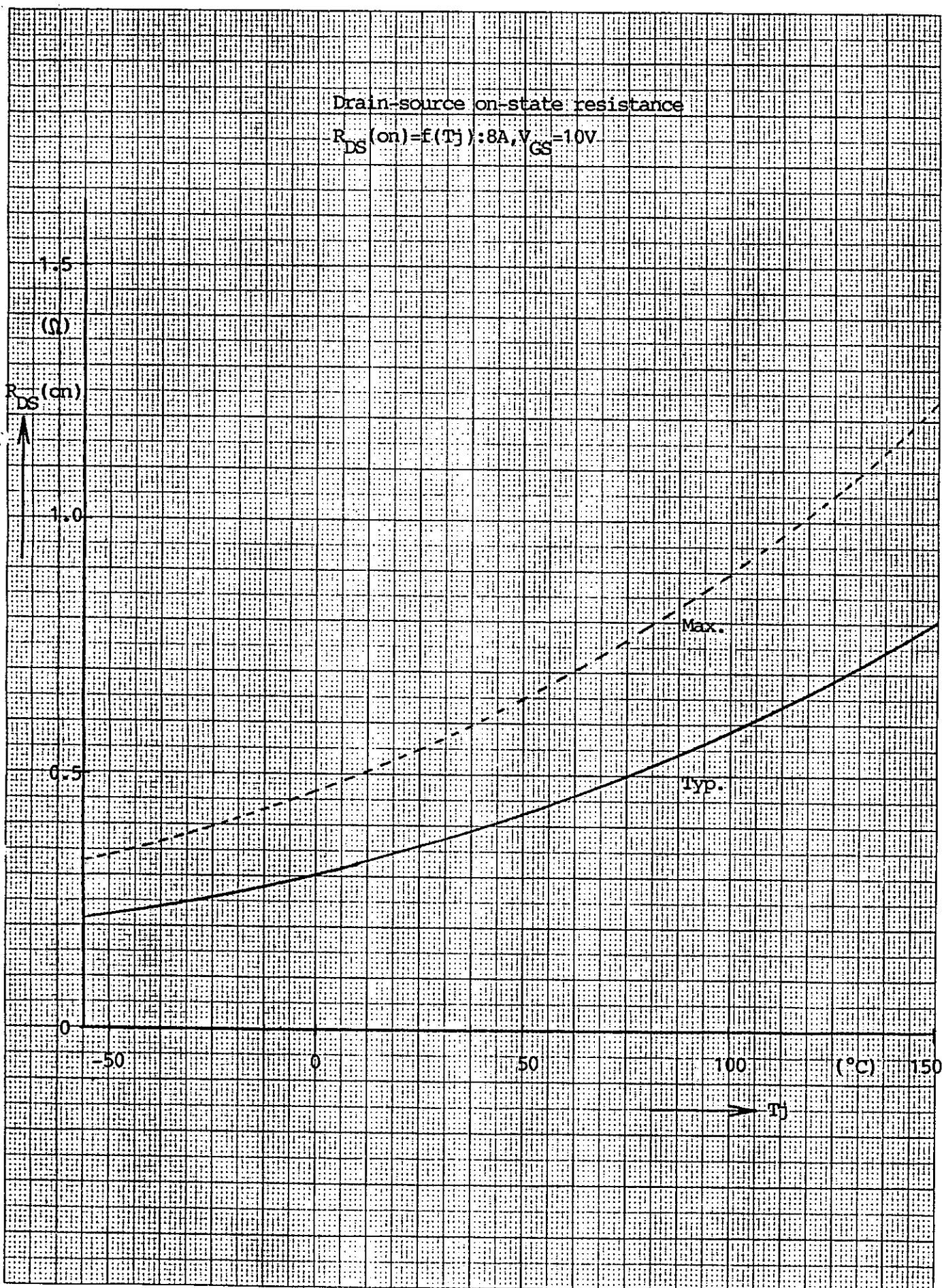
$g_{fs} = f(I_D)$: 80 μ s pulse test, $V_{DS} = 25V$, $T_J = 25^\circ C$



Typical drain-source on-state resistance

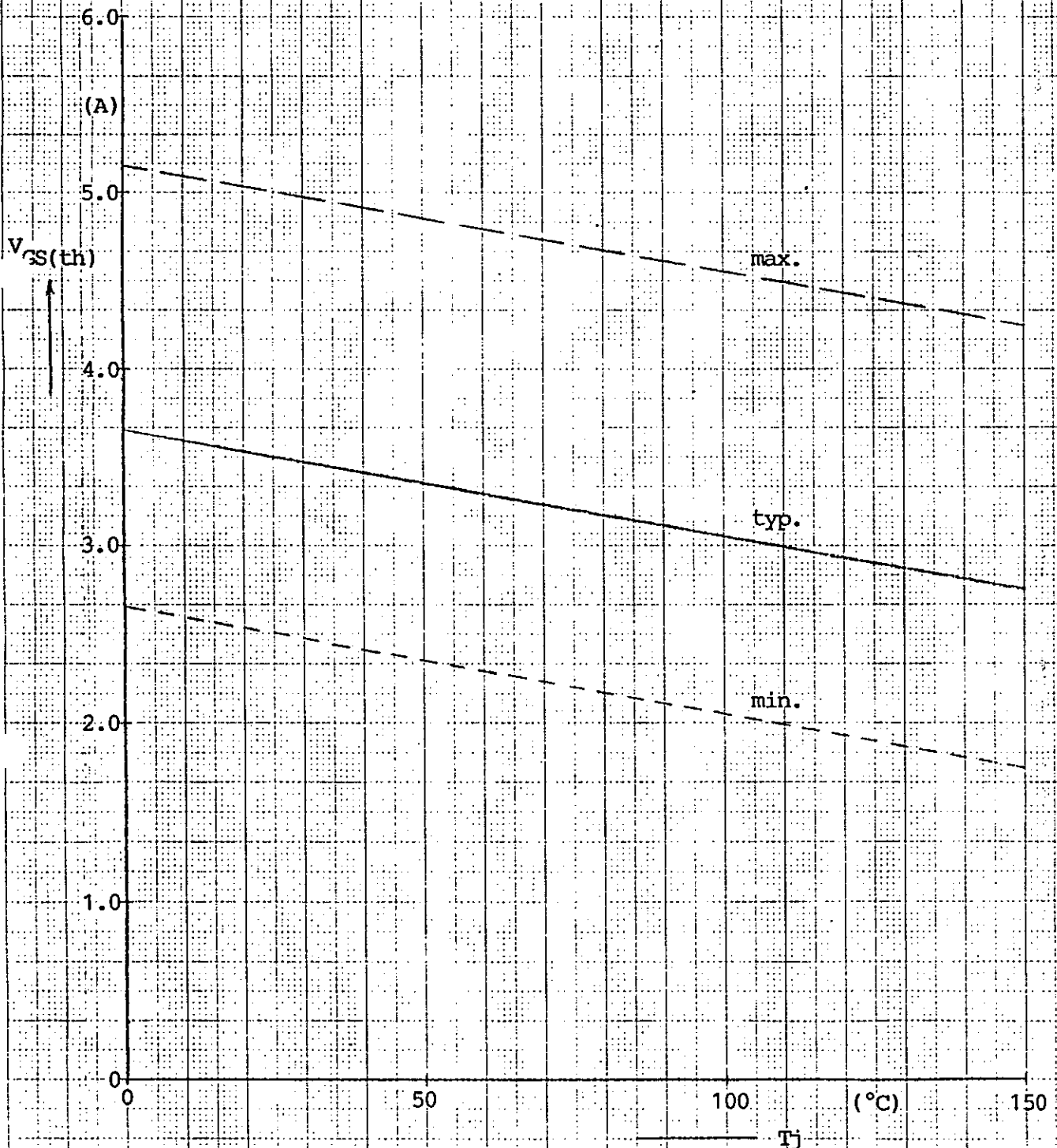
$$R_{DS(on)} = f(I_D, V_{GS}, T_j = 25^\circ\text{C})$$





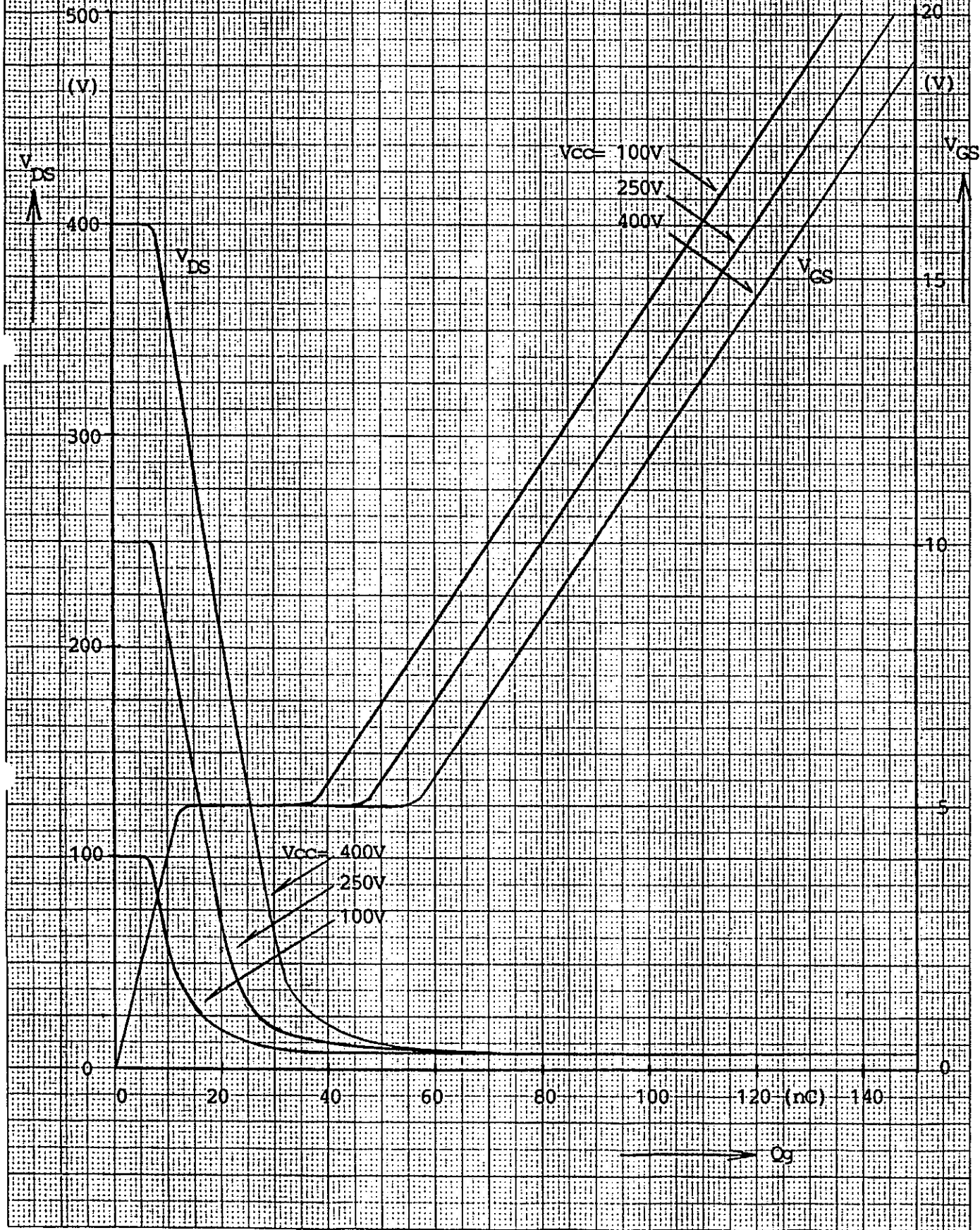
Gate threshold voltage

$$V_{GS(th)} = f(T_j): I_D = 1mA, V_{DS} = V_{GS}$$



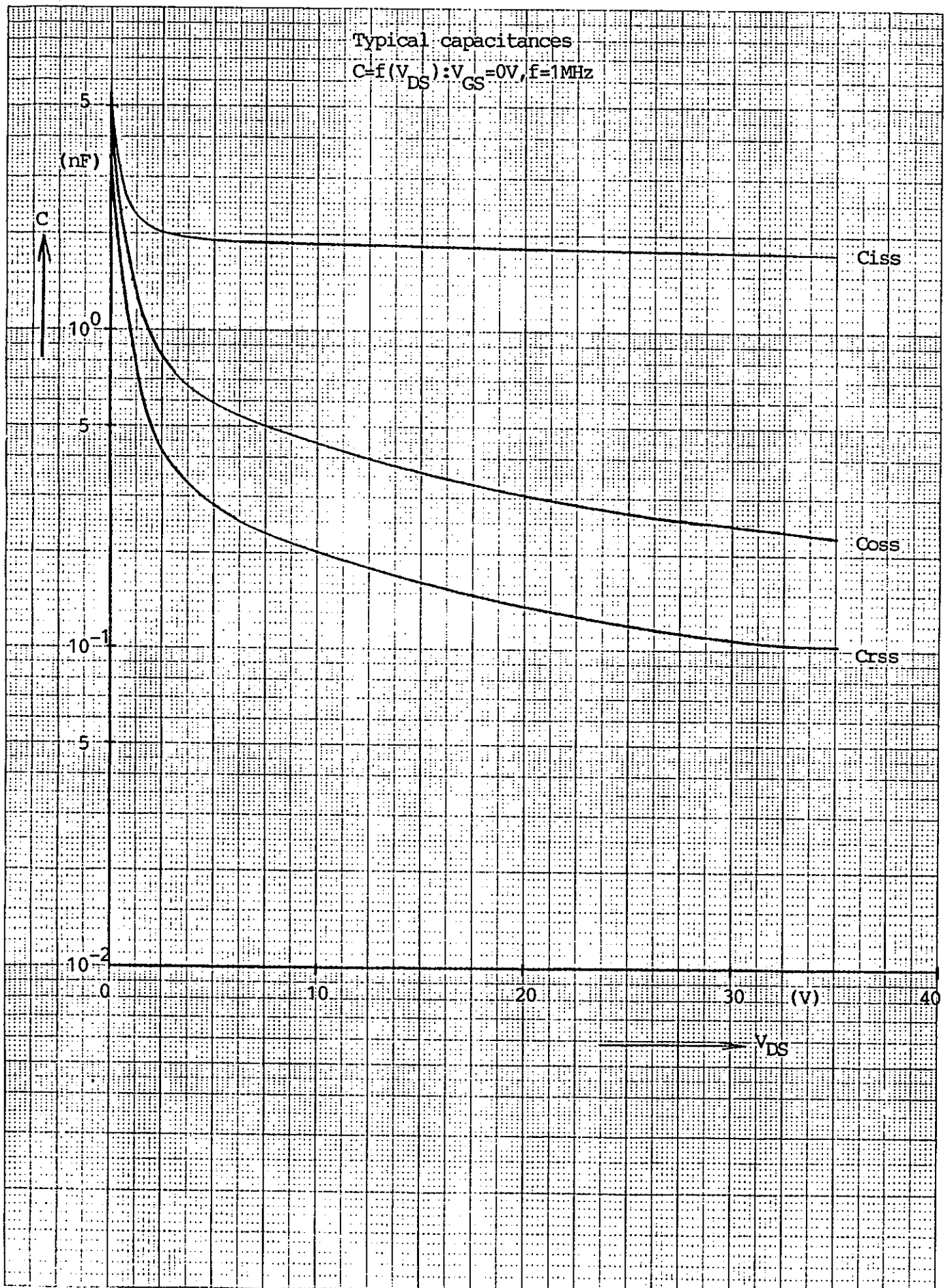
Typical gate charge characteristics

$$V_{GS} = f(Q_g); I_D = 15A$$



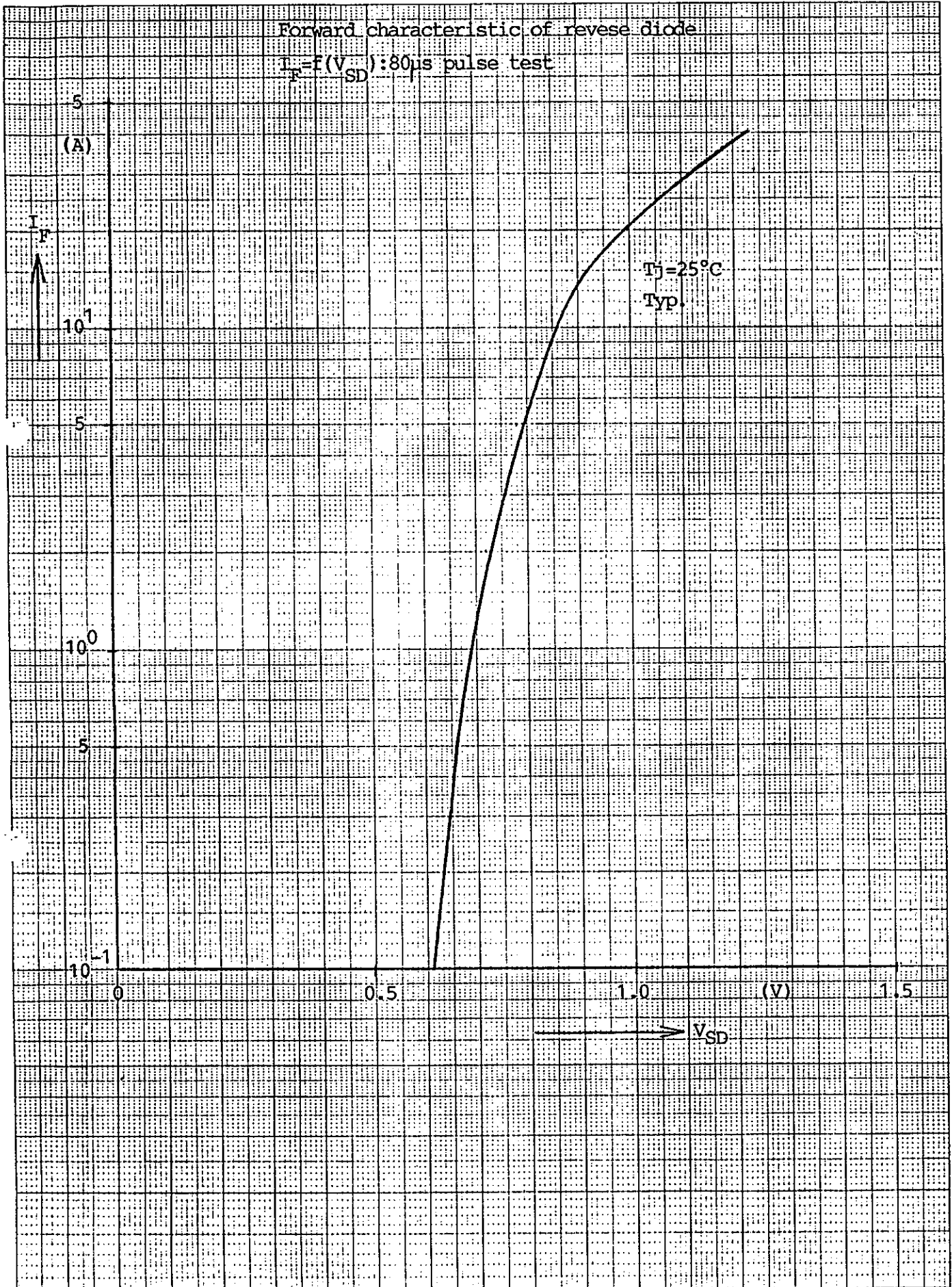
Typical capacitances

$$C=f(V_{DS}):V_{GS}=0V, f=1MHz$$

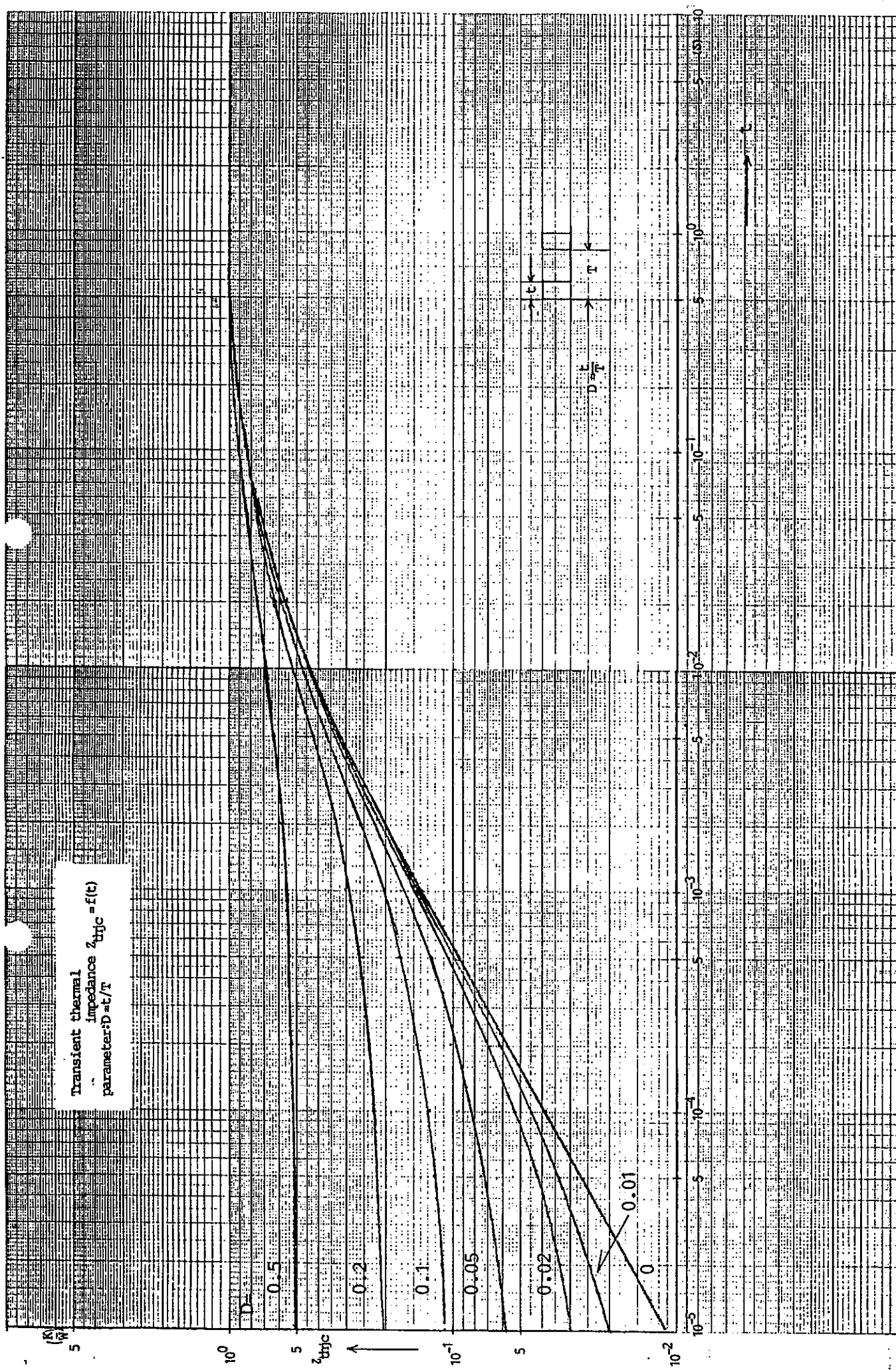


Forward characteristic of reverse diode

$I_F = f(V_{SD})$: 80 μ s pulse test

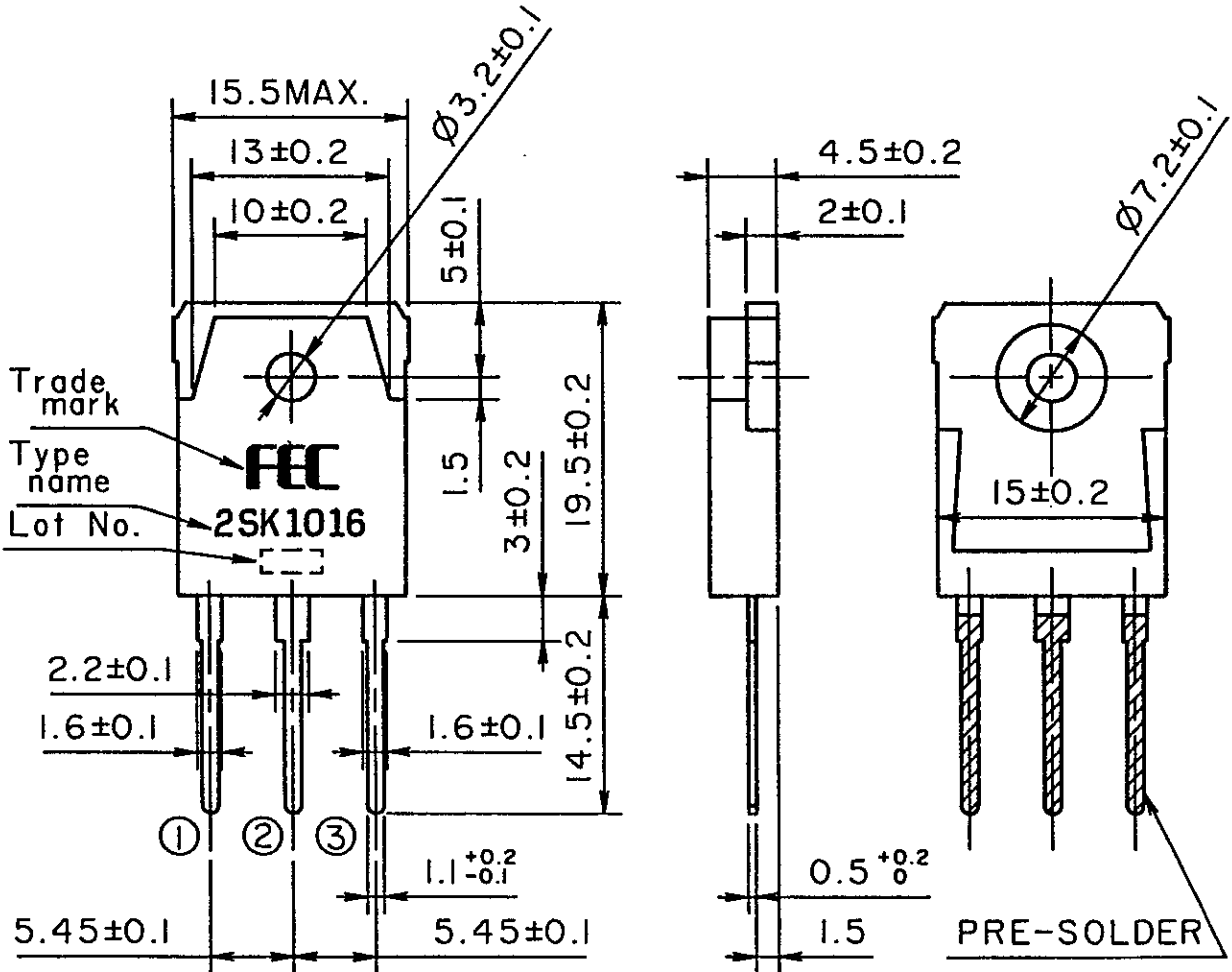


Transient thermal impedance $Z_{thjc} = f(t)$
 parameter: $D = t/T$



FUJI POWER MOS FET

TYPE : 2SK1016



Trade mark
Type name
Lot No.

FEC
2SK1016

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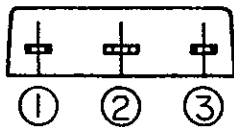
DIMENSIONS ARE IN MILLIMETERS.

CONNECTION

- ① GATE
- ② DRAIN
- ③ SOURCE

JEDEC : TO-228AA
EIAJ : SC-65

MS.T03P.2SKI016



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