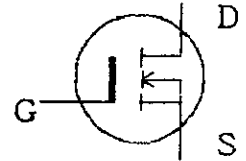


Fuji power MOSFET Specification

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  $T_c=25^\circ\text{C}$  (unless otherwise specified)

Description	Symbol	Characteristics	Unit	Remarks
Drain-source voltage	$V_{DS}$	500	V	
Drain-gate voltage	$V_{DGR}$	500	V	$R_{GS} = 20\text{K}\Omega$
Continuous Drain current	$I_D$	15	A	
Pulsed drain current	$I_{Dpulse}$	40	A	
Gate-source voltage	$V_{GS}$	$\pm 30$	V	
Maximum power dissipation	$P_D$	125	W	
Operating and storage temperature range	$T_j$	150	$^\circ\text{C}$	
	$T_{stg}$	-55 ~ +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	$BV_{DSS}$	$I_D = 1\text{mA}$ $V_{GS} = 0\text{V}$	500			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	$I_{DSS}$	$V_{DS} = 500\text{V}$ $V_{GS} = 0\text{V}$				$T_j = 25^\circ\text{C}$ $\mu\text{A}$
	$I_{DSS}$					$T_j = 125^\circ\text{C}$ 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	$R_{DS(on)}$	$I_D = 8\text{A}$ $V_{GS} = 10\text{V}$		0.36	0.55	$\Omega$

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

Fuji Electric Co., Ltd.	
DWG. NO.	MT5F1306 1/5

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 deain 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	$\mu C$

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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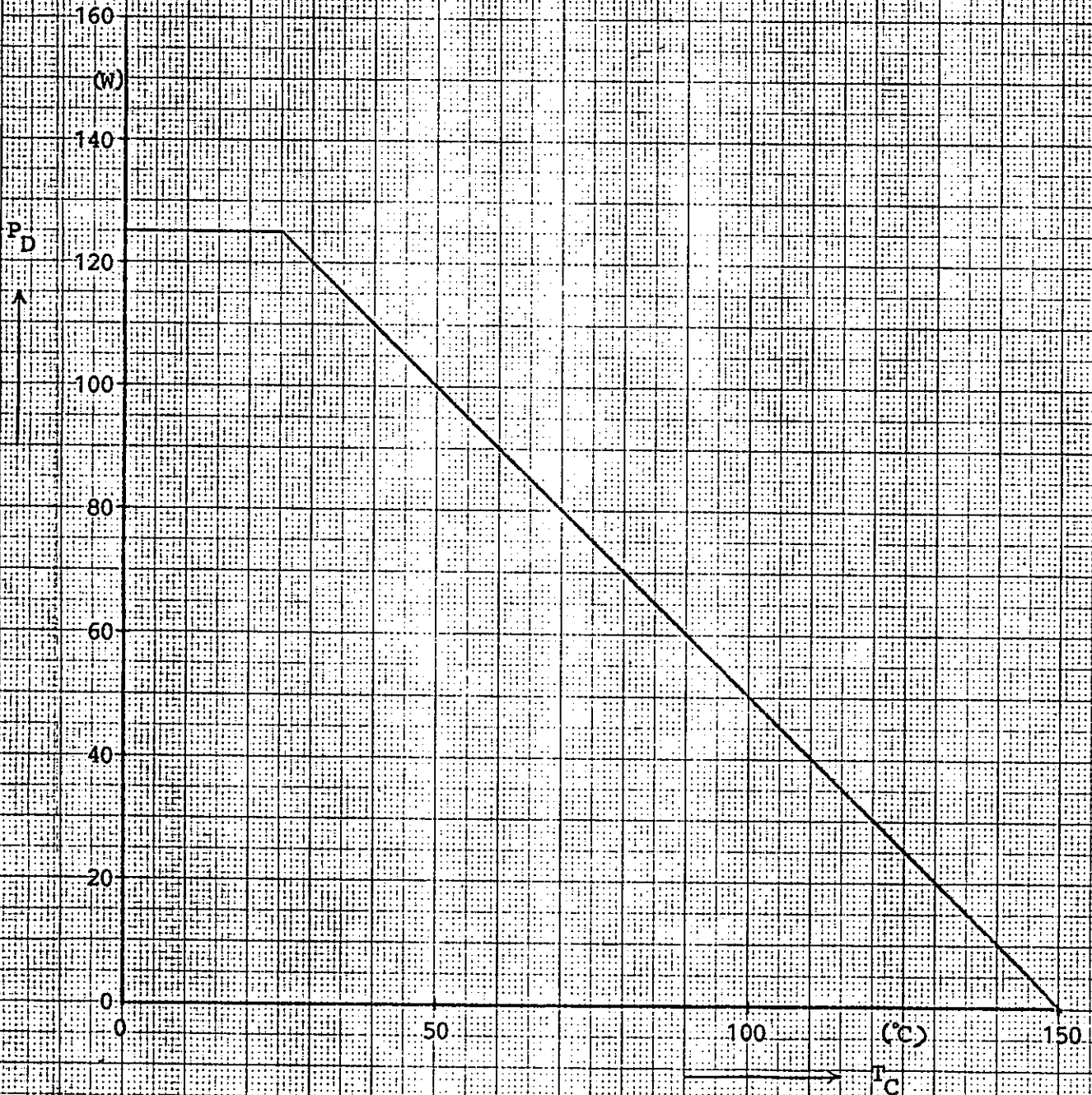
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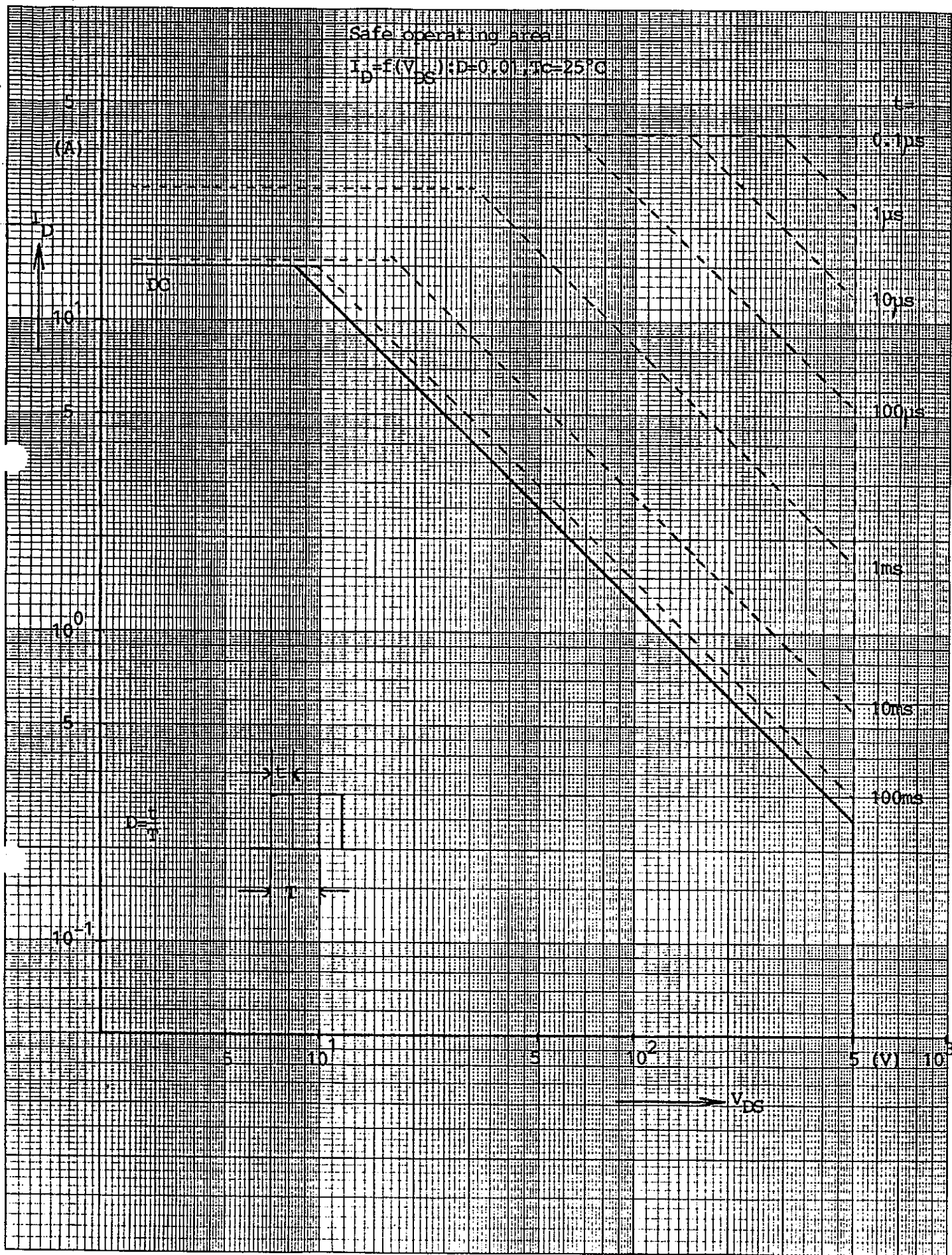
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Power dissipation

$$P_D = f(T_C)$$

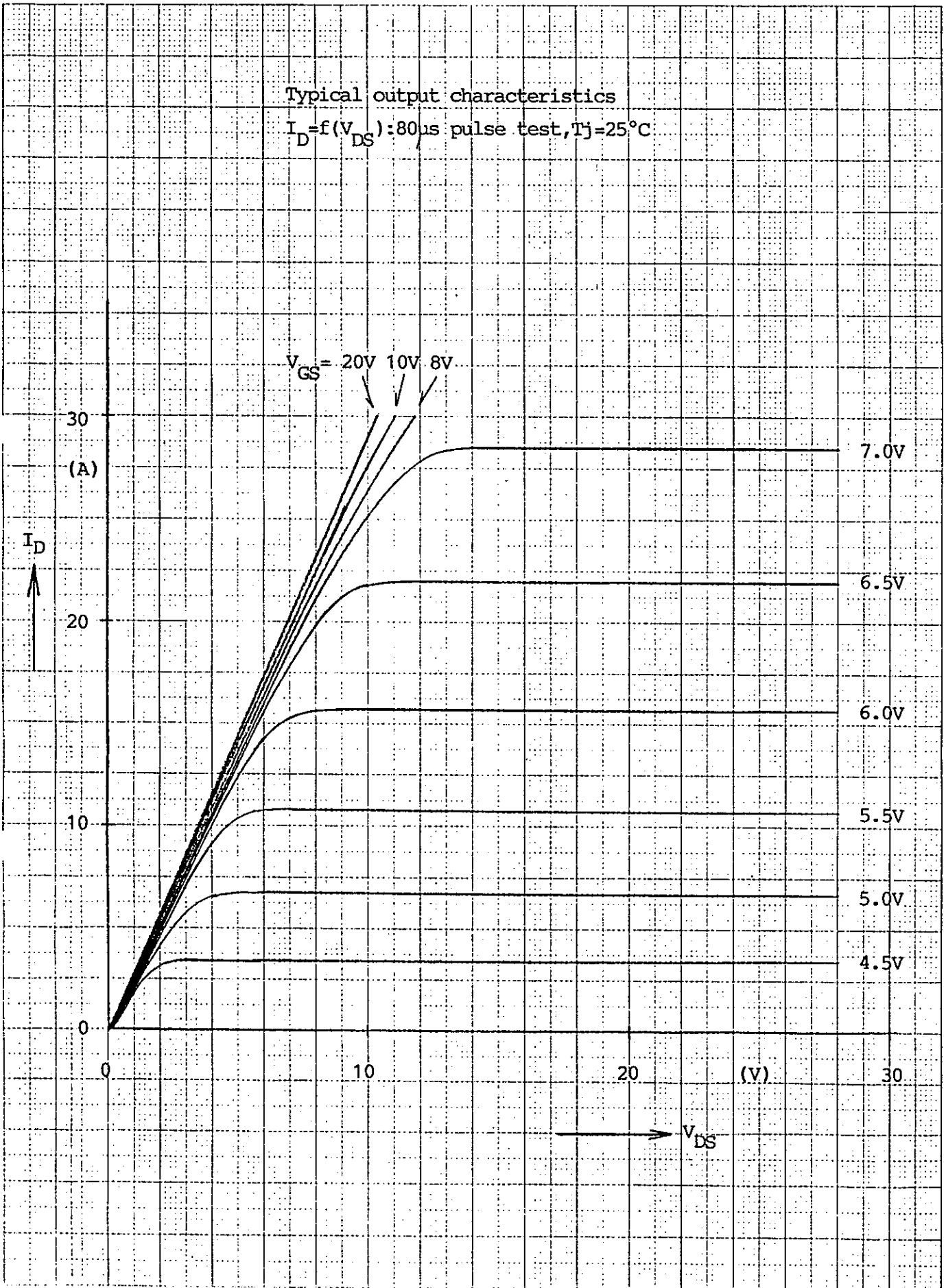




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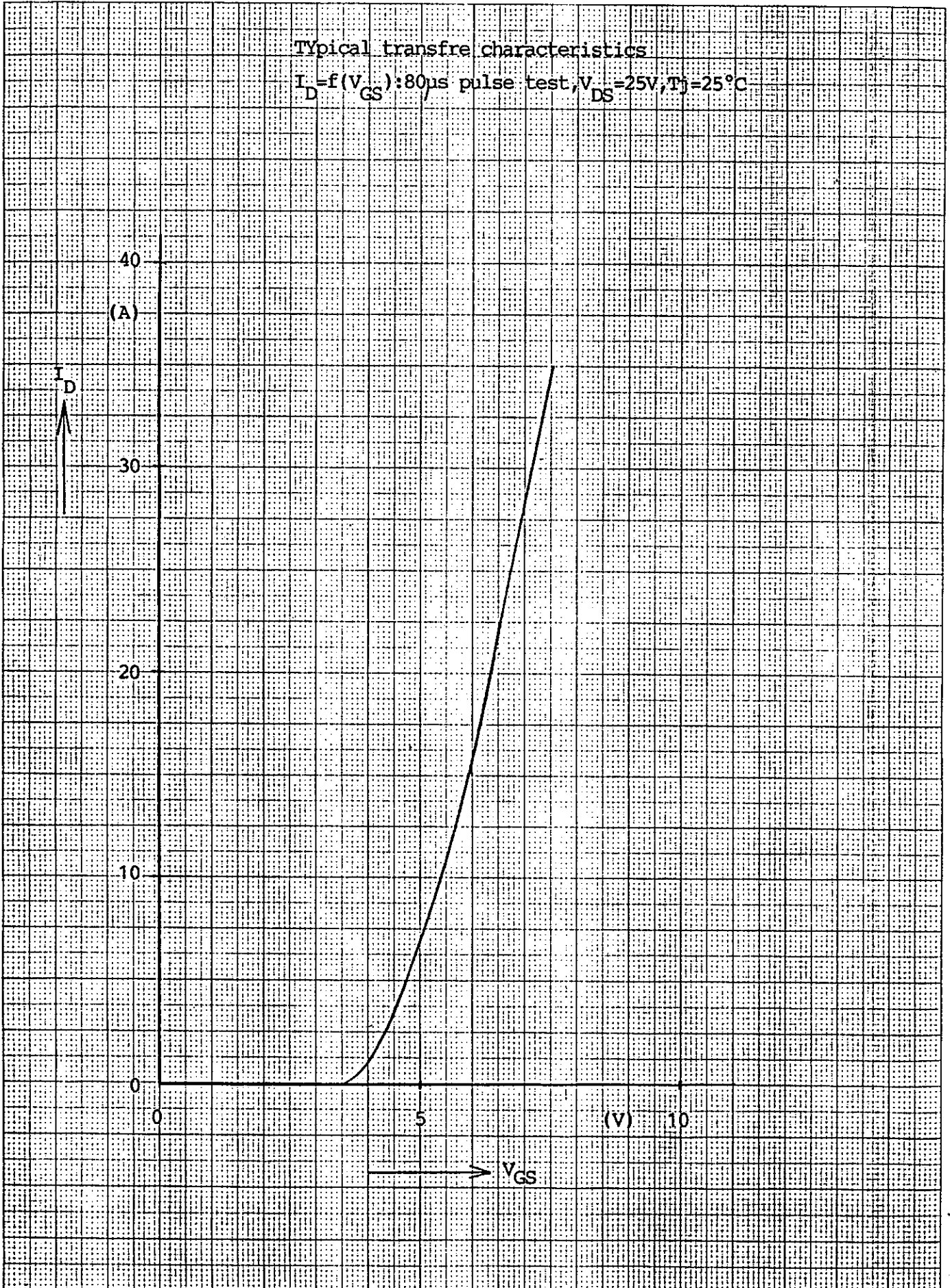
Typical output characteristics

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



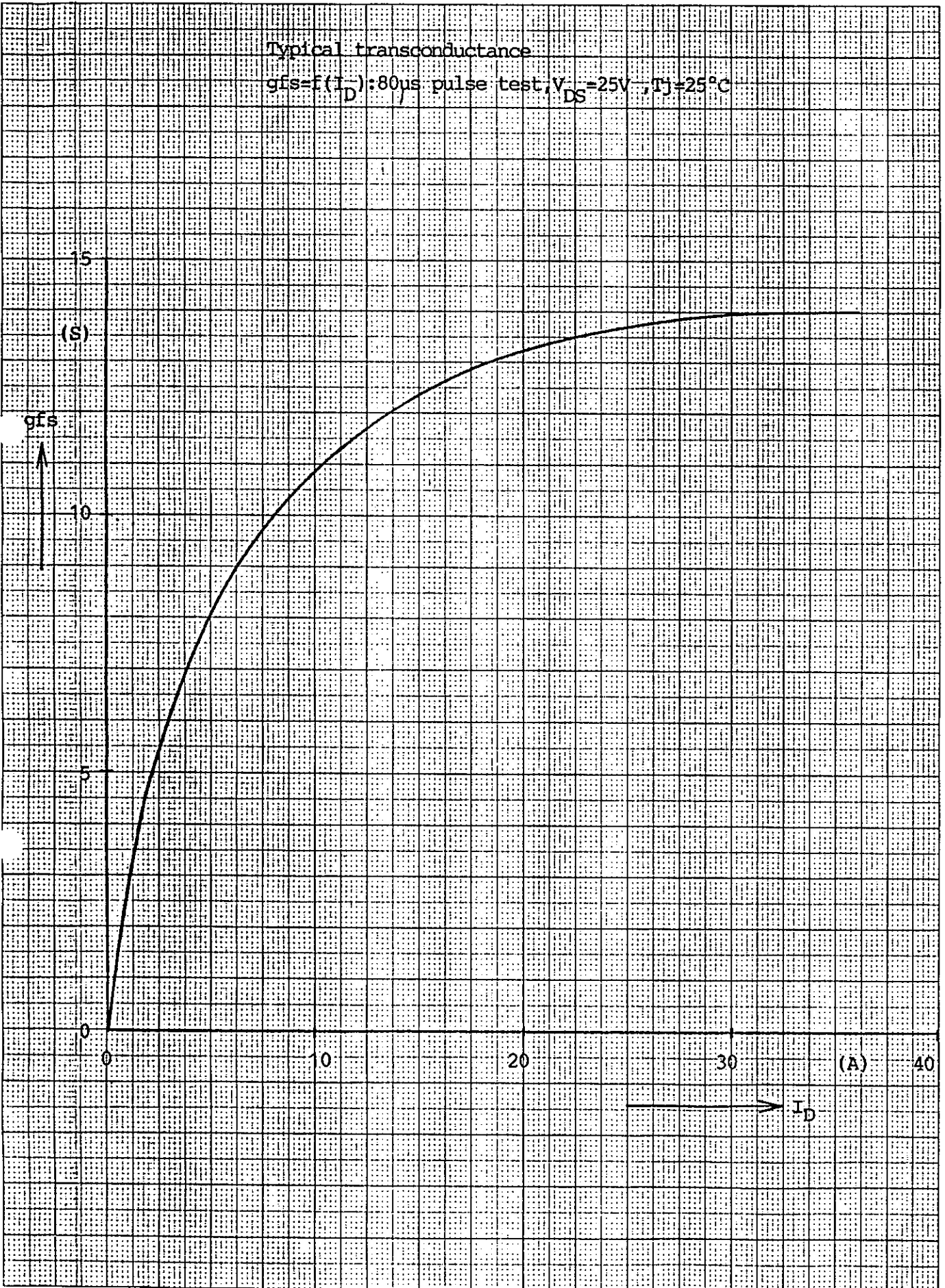
Typical transfre characteristics

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



Typical transconductance

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

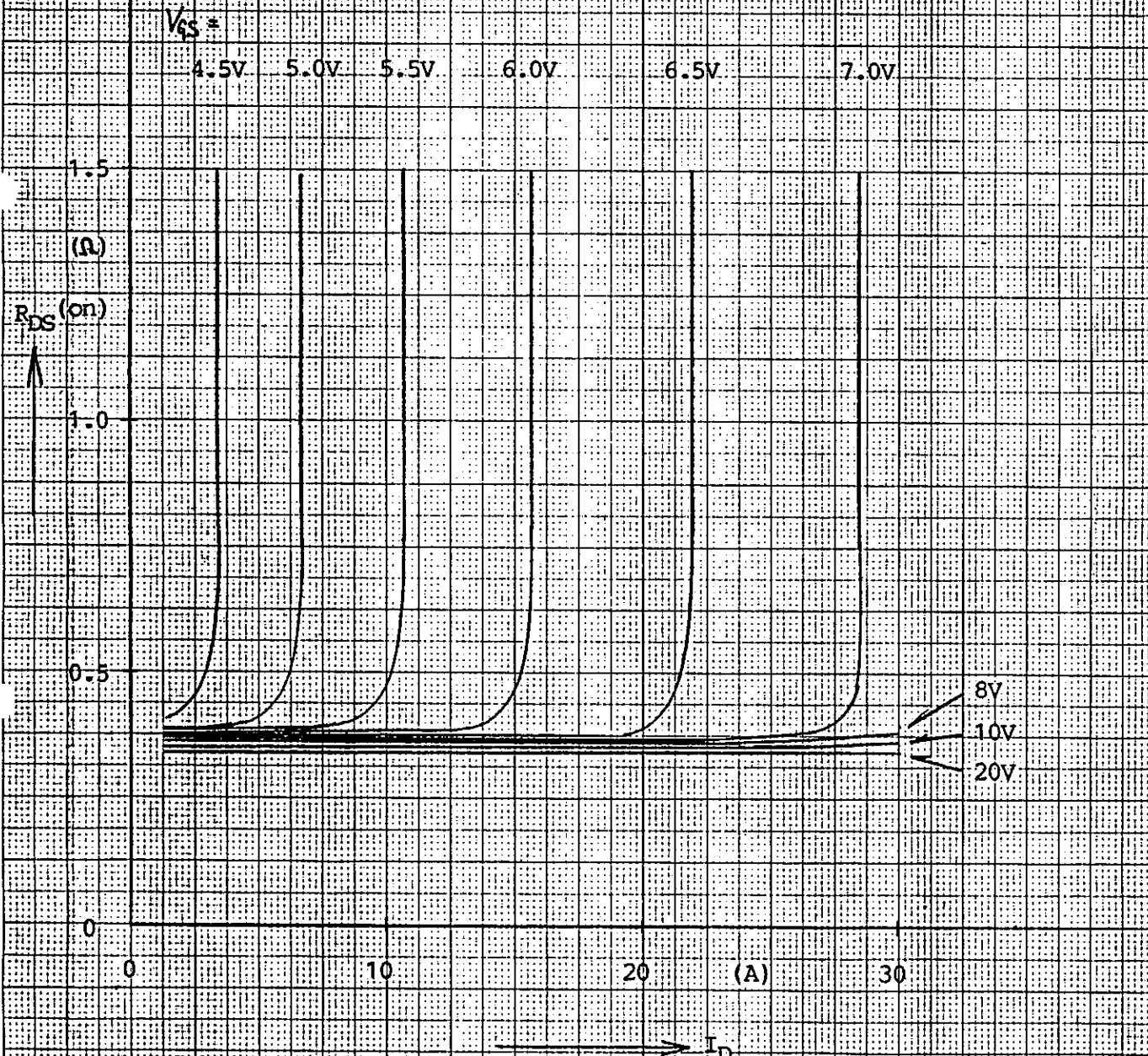


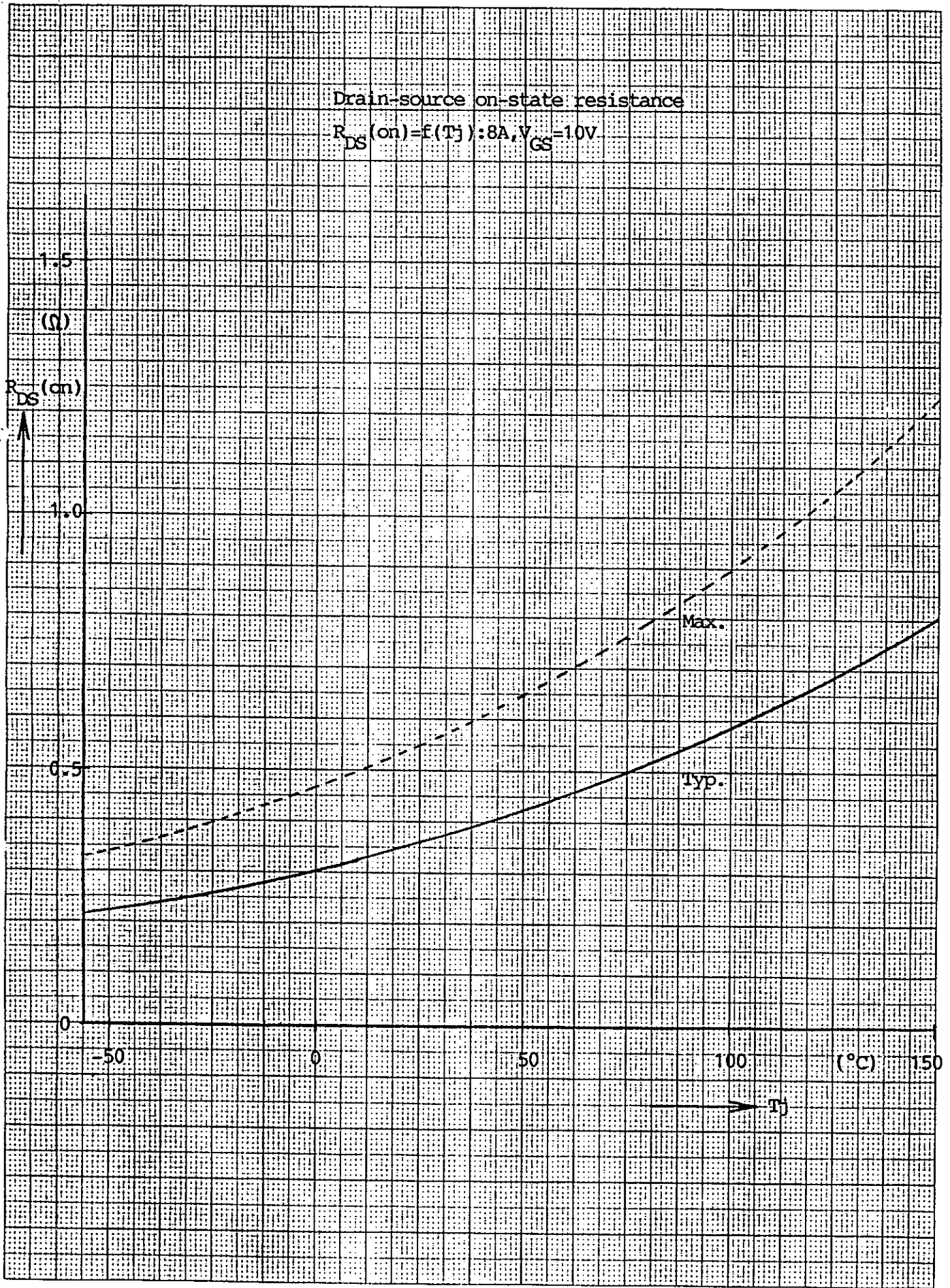
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Typical drain-source on-state resistance

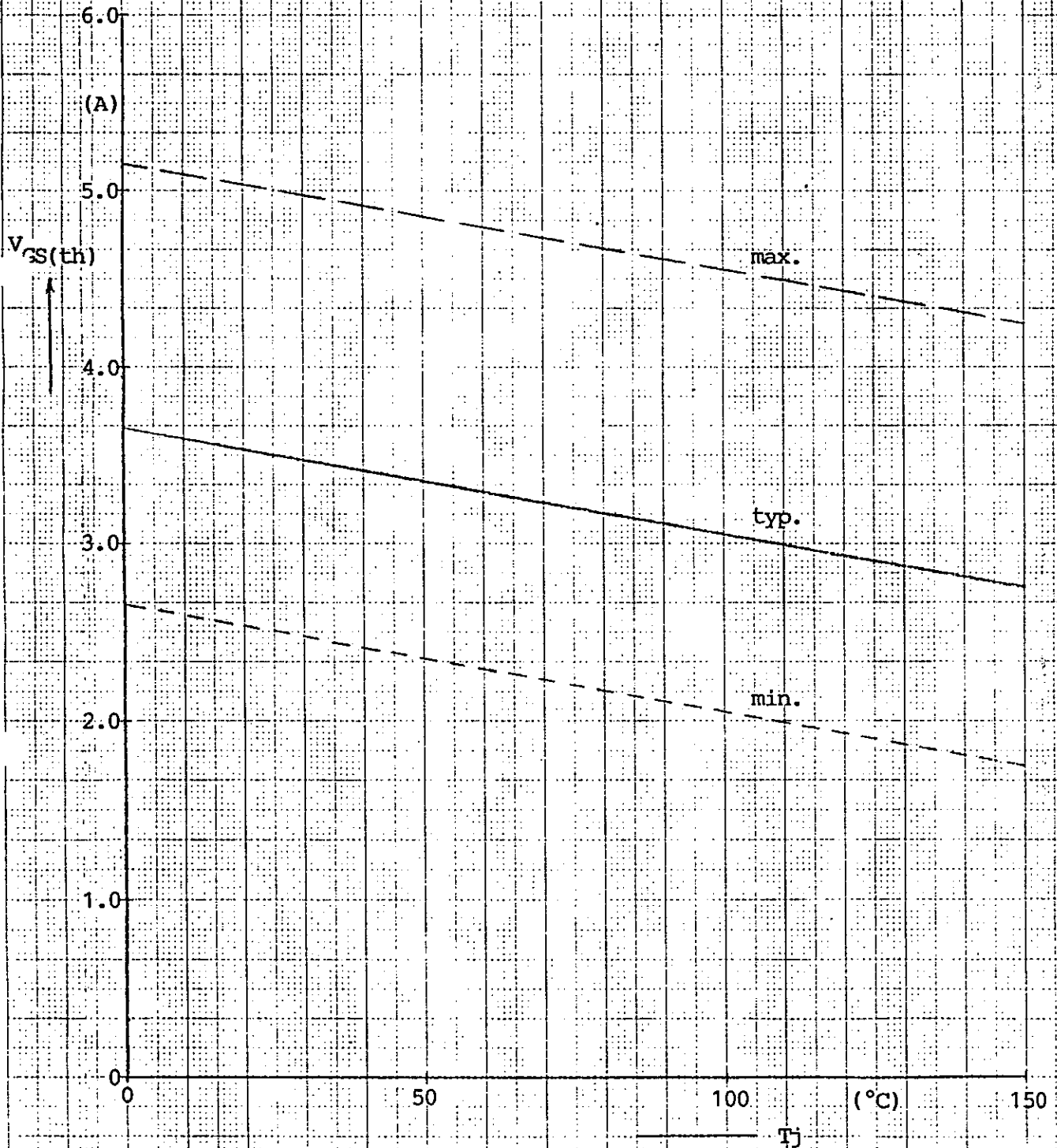
$$R_{DS(on)} = f(I_D, V_{GS}, T_j = 25^\circ\text{C})$$





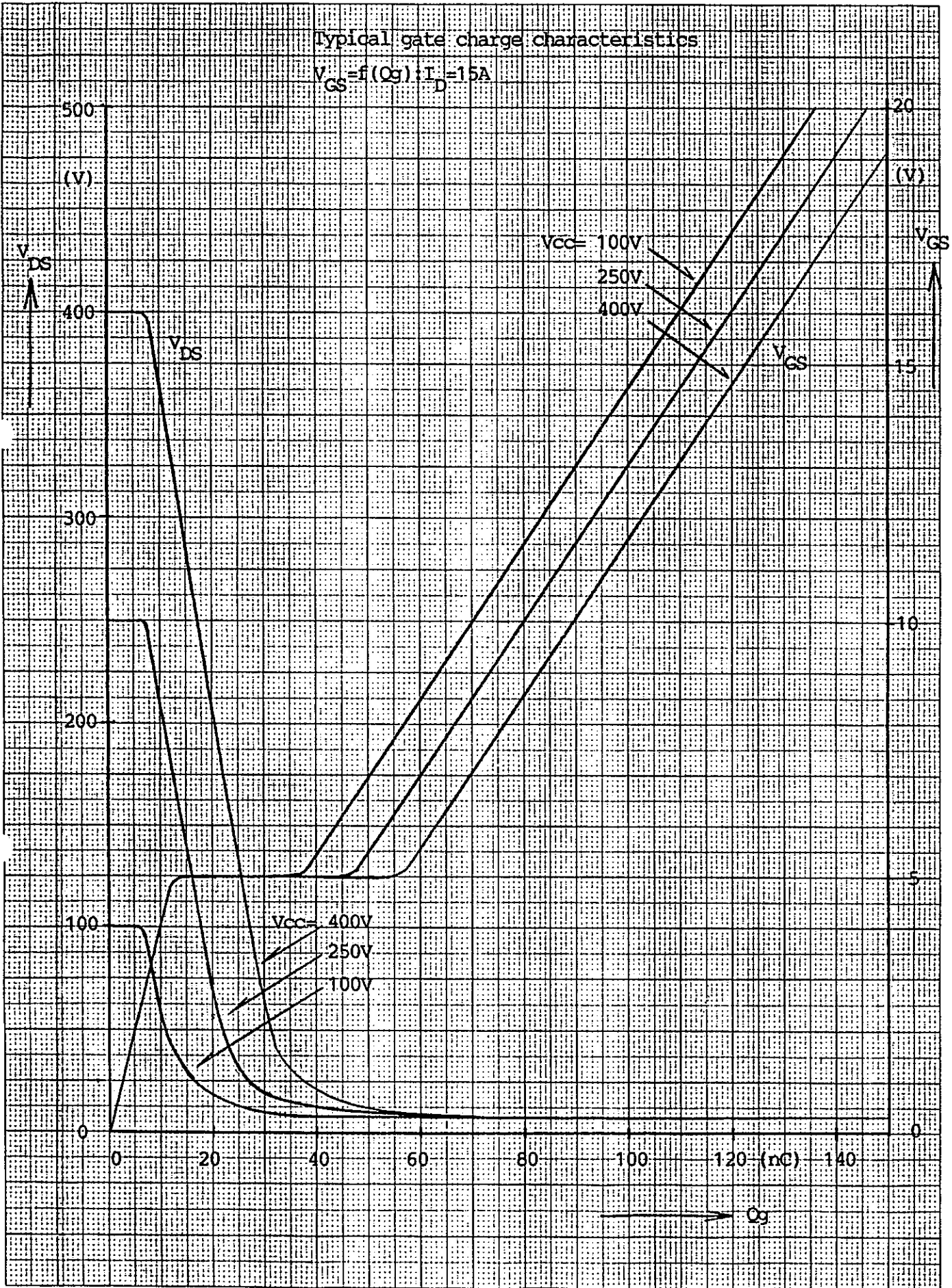
Gate threshold voltage

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

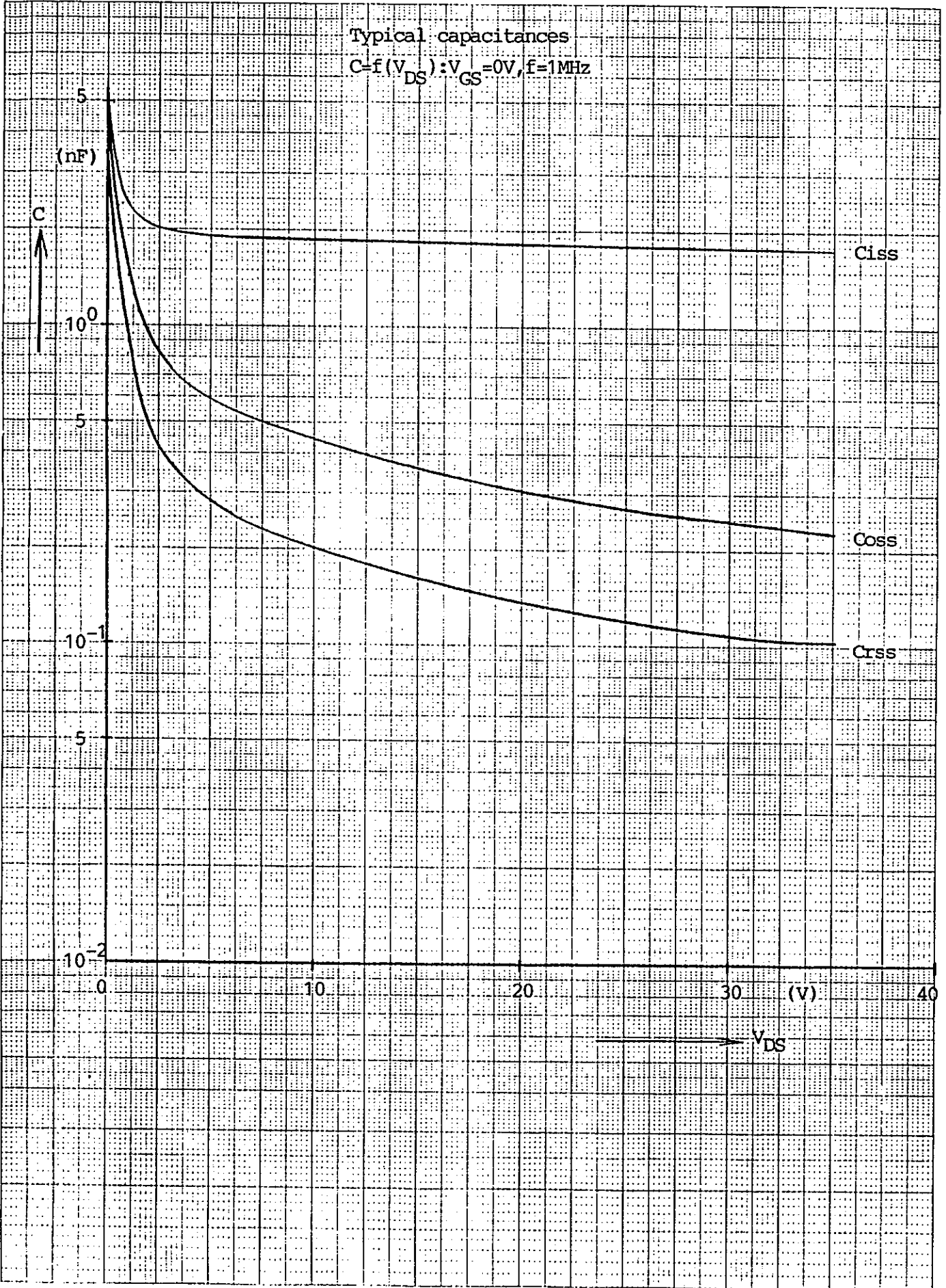


Typical gate charge characteristics

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

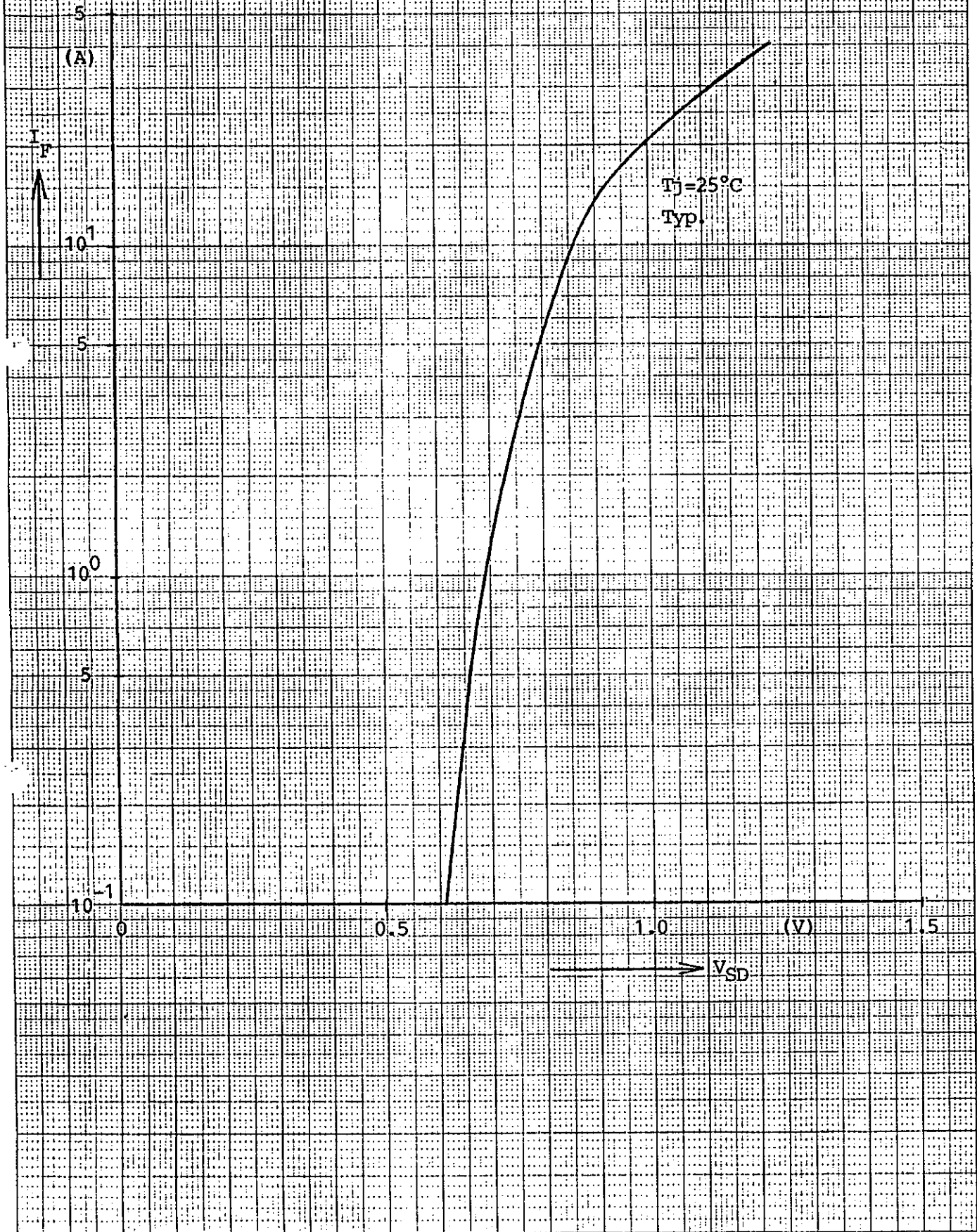


Typical capacitances  
 $C=f(V_{DS}): V_{GS}=0V, f=1MHz$

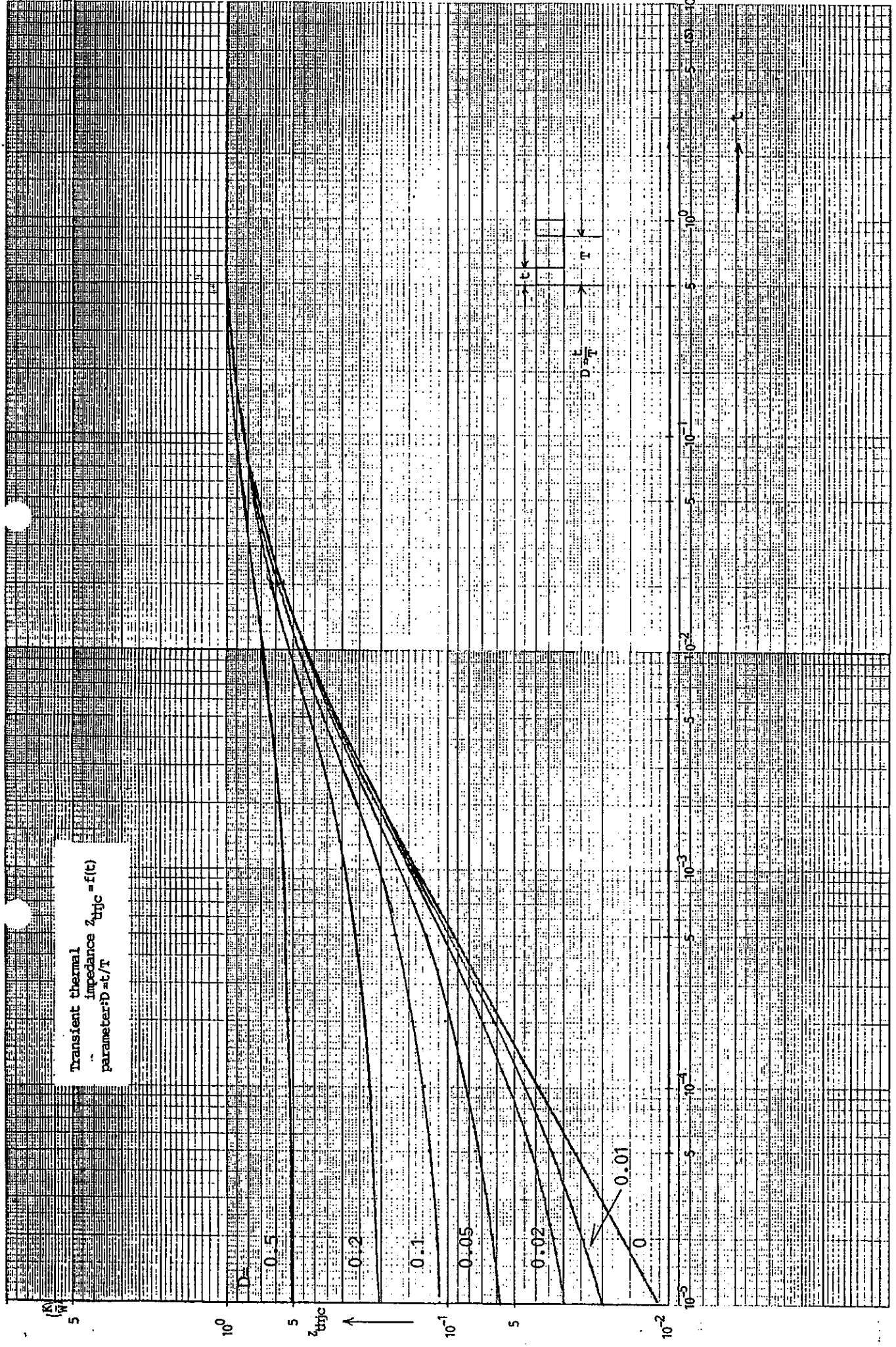


Forward characteristic of reverse diode

$I_F = f(V_{SD})$ : 80 $\mu$ s pulse test



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

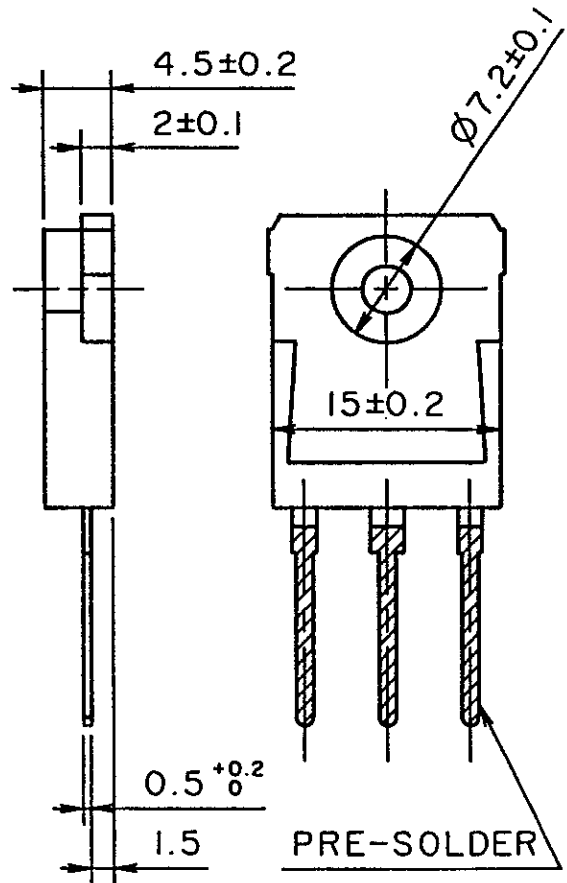
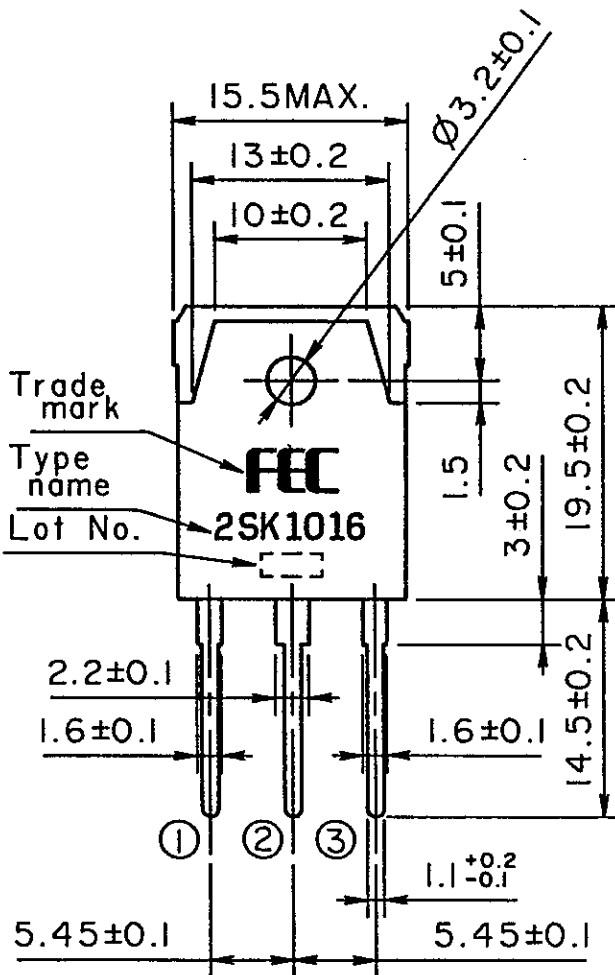


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FUJI POWER MOS FET

TYPE : 2SKI016



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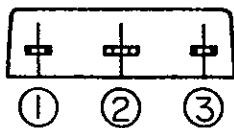
CONNECTION

- ① GATE
- ② DRAIN
- ③ SOURCE

JEDEC : TO-228AA  
EIAJ : SC-65

MS.T03P.2SKI016

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