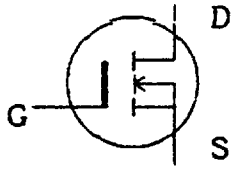
1. Scope
This specifies Fuji power MOSFET 2SK1512

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




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

| Description | Symbol | Characteristics | Unit | Remarks |
|---|---|---|---|---|
| Drain-source voltage | $V_{DS}$ | 900 | V | |
| Drain-gate voltage | $V_{DGR}$ | 900 | V | $R_{GS}$=20KΩ |
| 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 | ℃ | |
| | $T_{stg}$ | -55 ~ +150 | ℃ | |

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

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



| | DATE | NAME | APPROVED |
|---|---|---|---|
| DRAWN | Aug.-20-'90 | T.SHIOTANI | |
| CHECKED | Aug-21-'90 | T. Arai | |
| | Aug.21-'90 | S. Furuhata | |

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Dynamic ratings

| Description | Symbol | Conditions | Characteristics Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Forward transconductance | g f s | $I_D$ = 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, $R_{GS}$ = 25Ω | | 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 Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Continuous reverse drain current | $I_{DR}$ | Tc = 25℃ | | | 10 | A |
| Pulsed reverse deain current | $I_{DRM}$ | Tc = 25℃ | | | 30 | A |
| Diode forward on-voltage | $V_{SD}$ | $I_F = 2 \times I_{DR}$, $V_{GS}$ = 0 V, $T_{ch}$ = 25℃ | | 0.96 | 1.44 | V |
| Reverse recovery time | $t_{rr}$ | $I_F = I_{DR}$, $dI_F/dt$ = 100A/μS, $T_{ch}$ = 25℃ | | | | ns |
| Reverse recovery charge | $Q_{rr}$ | | | | | μC |

5. Thermal resistance

| Description | Symbol | Conditions | Characteristics Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Thermal resistance | $R th_{ch-c}$ | | | | 0.83 | ℃/W |
| | $R th_{ch-a}$ | | | | 35.0 | ℃/W |



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|---|---|---|---|
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## 6. 御注意 (Attention)

本製品は外国為替および外国貿易管理法の規定により戦略物資（または役務）に該当しますので、輸出する場合には、同法に基づく通商産業大臣の輸出許可が必要です。

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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| CHECKED | - - | | |
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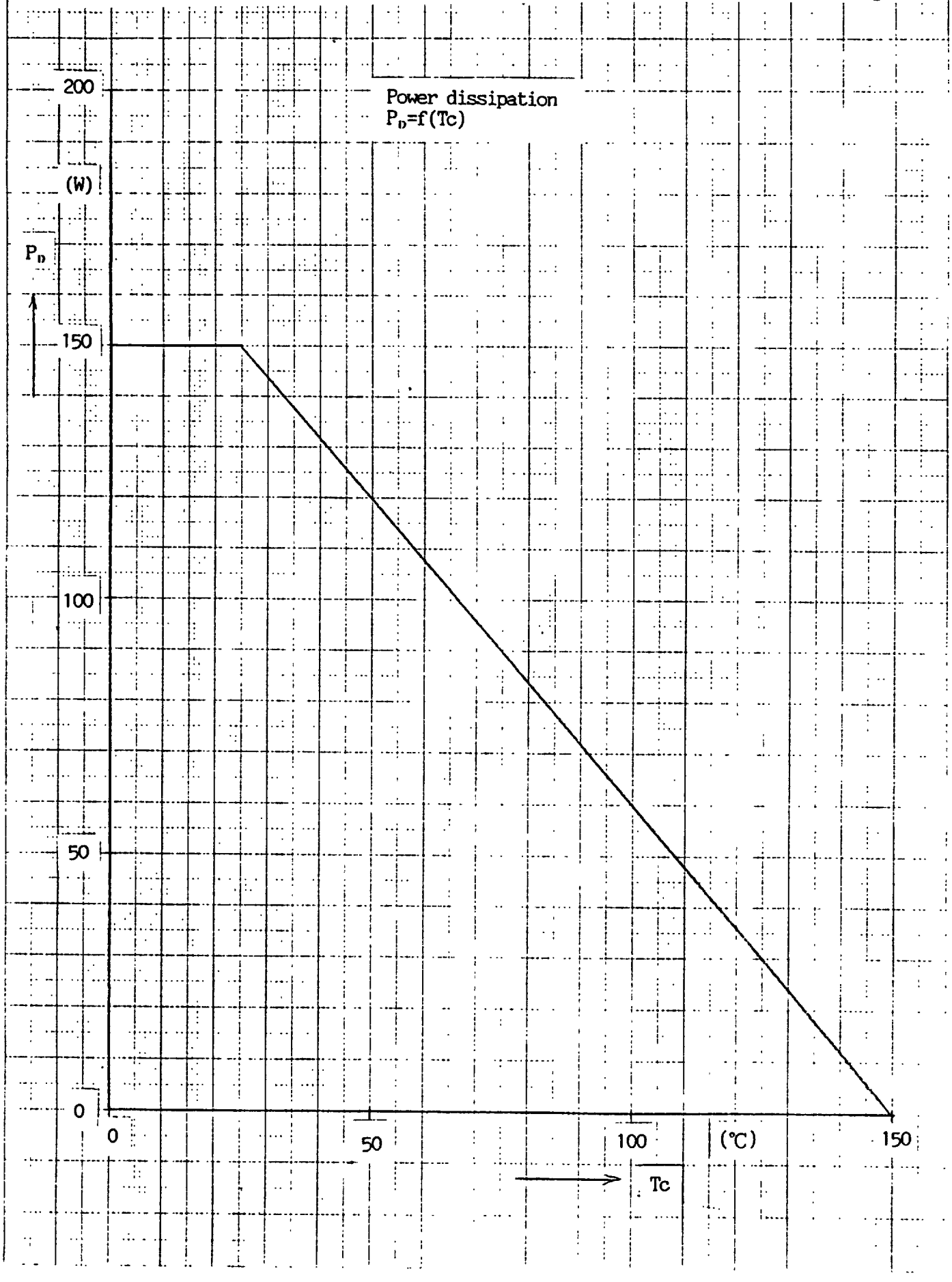




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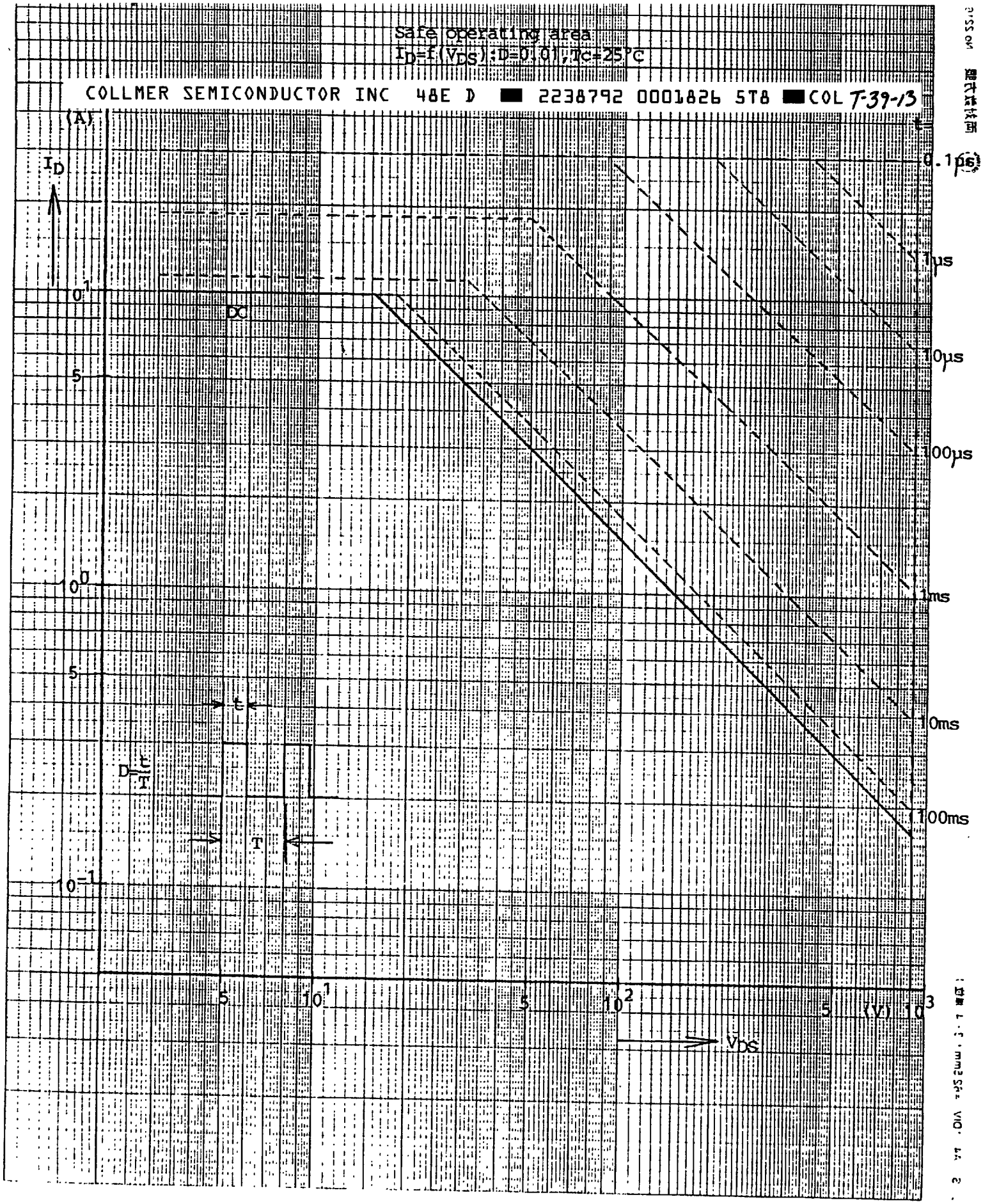
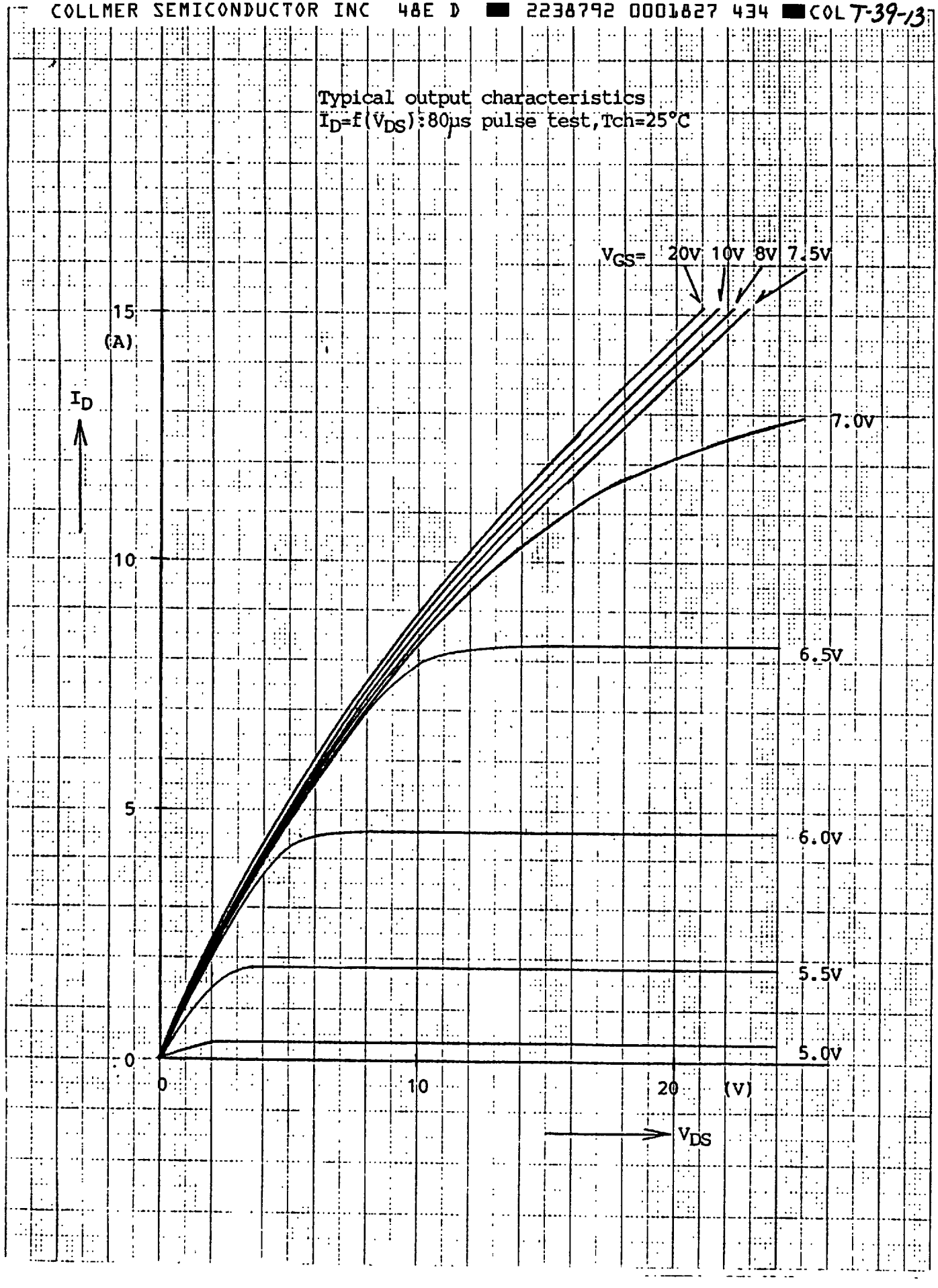
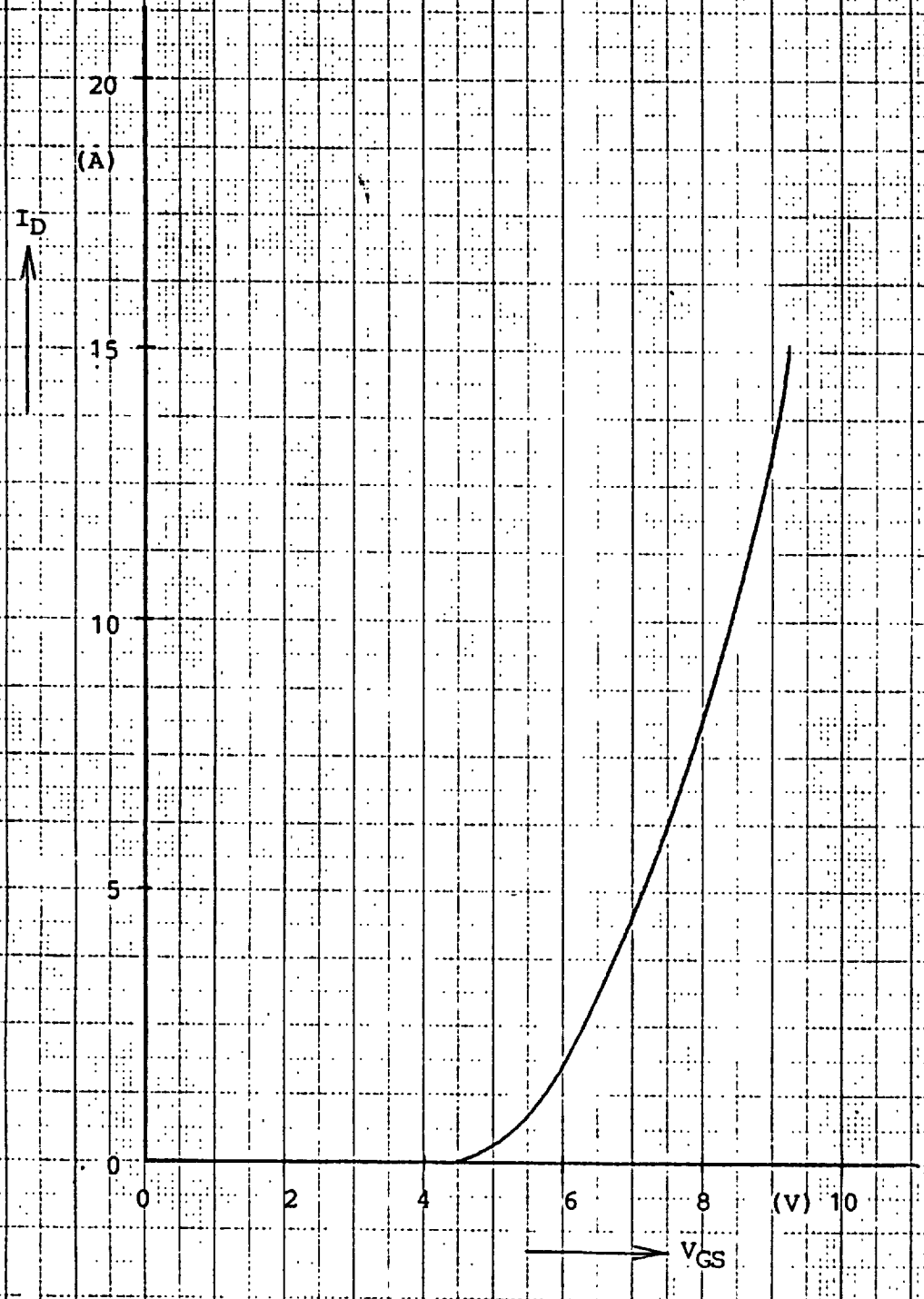
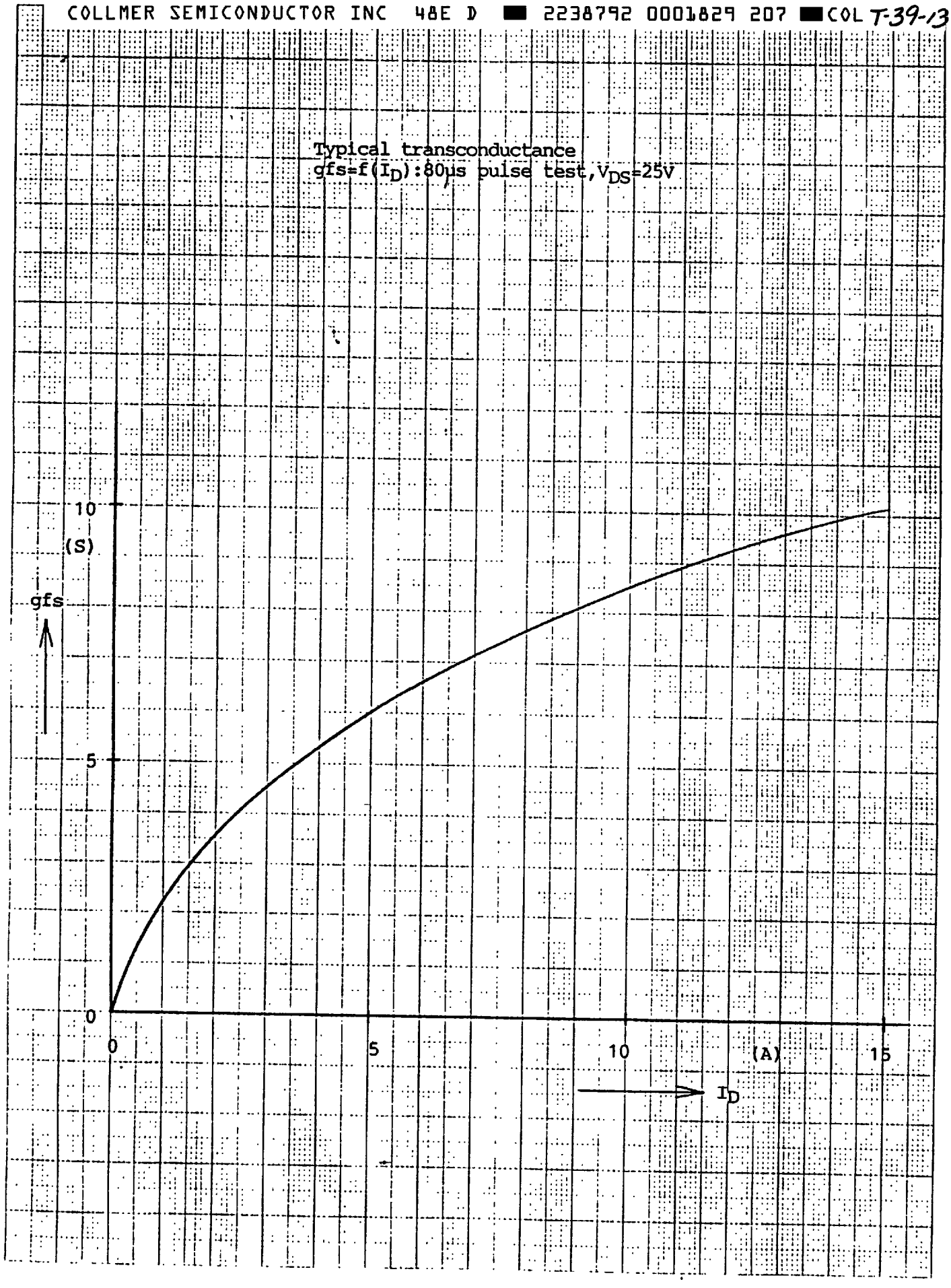

Safe operating area
$I_D=f(V_{DS})$; D=0.01, Tc=25°C
(A)
$I_D$
$10^1$
DC
5
$10^0$
5
$10^{-1}$
$t_p$
D=$\frac{t_p}{T}$
T
0.1µs
1µs
10µs
100µs
1ms
10ms
100ms
5
$10^1$
5
$10^2$
5
(V)
$10^3$
$V_{DS}$

Typical output characteristics
$I_D=f(V_{DS})$:80μs pulse test,Tch=25°C



Typical trasfer characteristic
$I_D=f(V_{GS})$:80us pulse test, $V_{DS}$=25V, Tch=25°C







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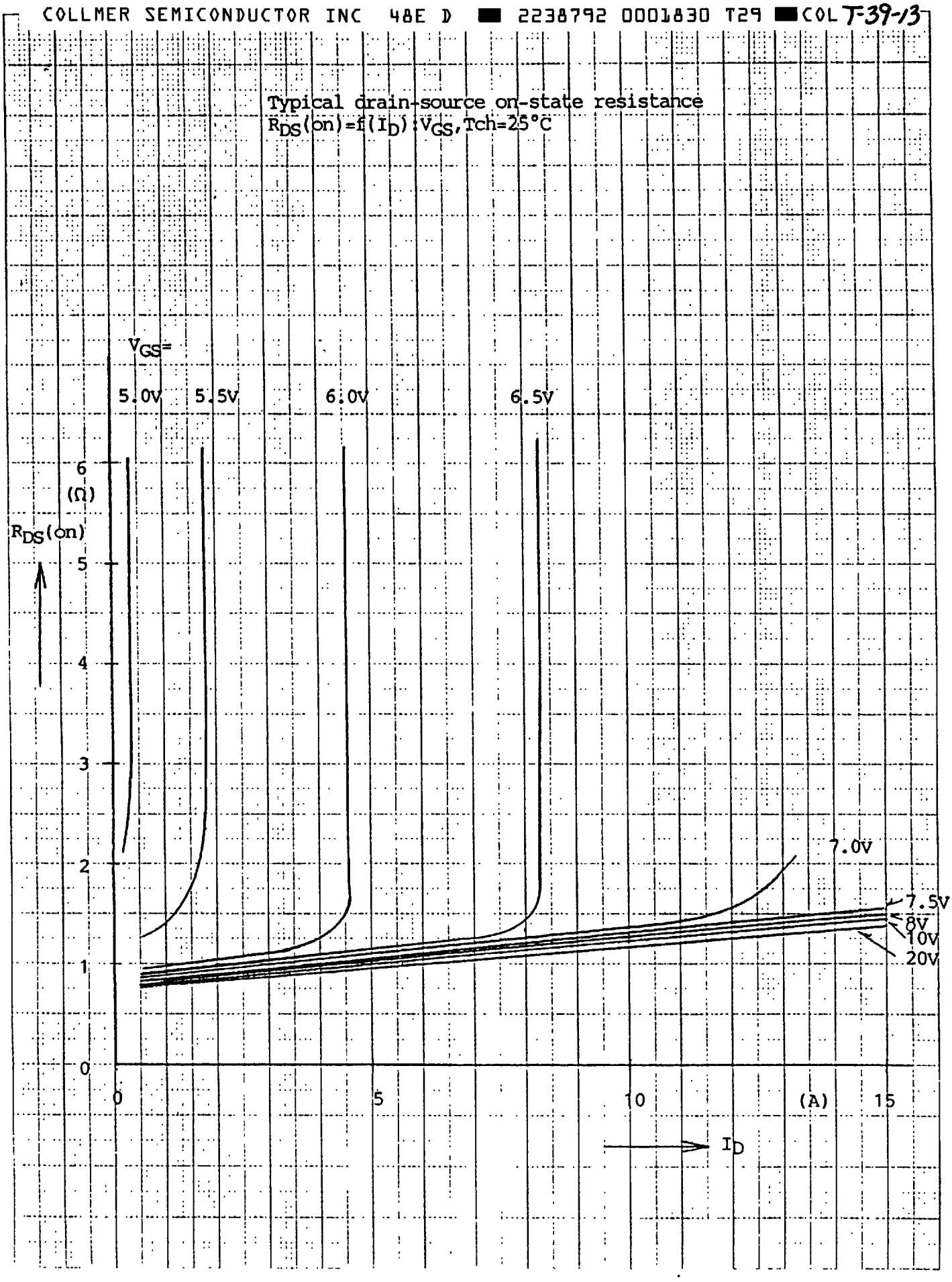
Typical drain-source on-state resistance
$R_{DS(on)}=f(I_D):V_{GS}, Tch=25°C$



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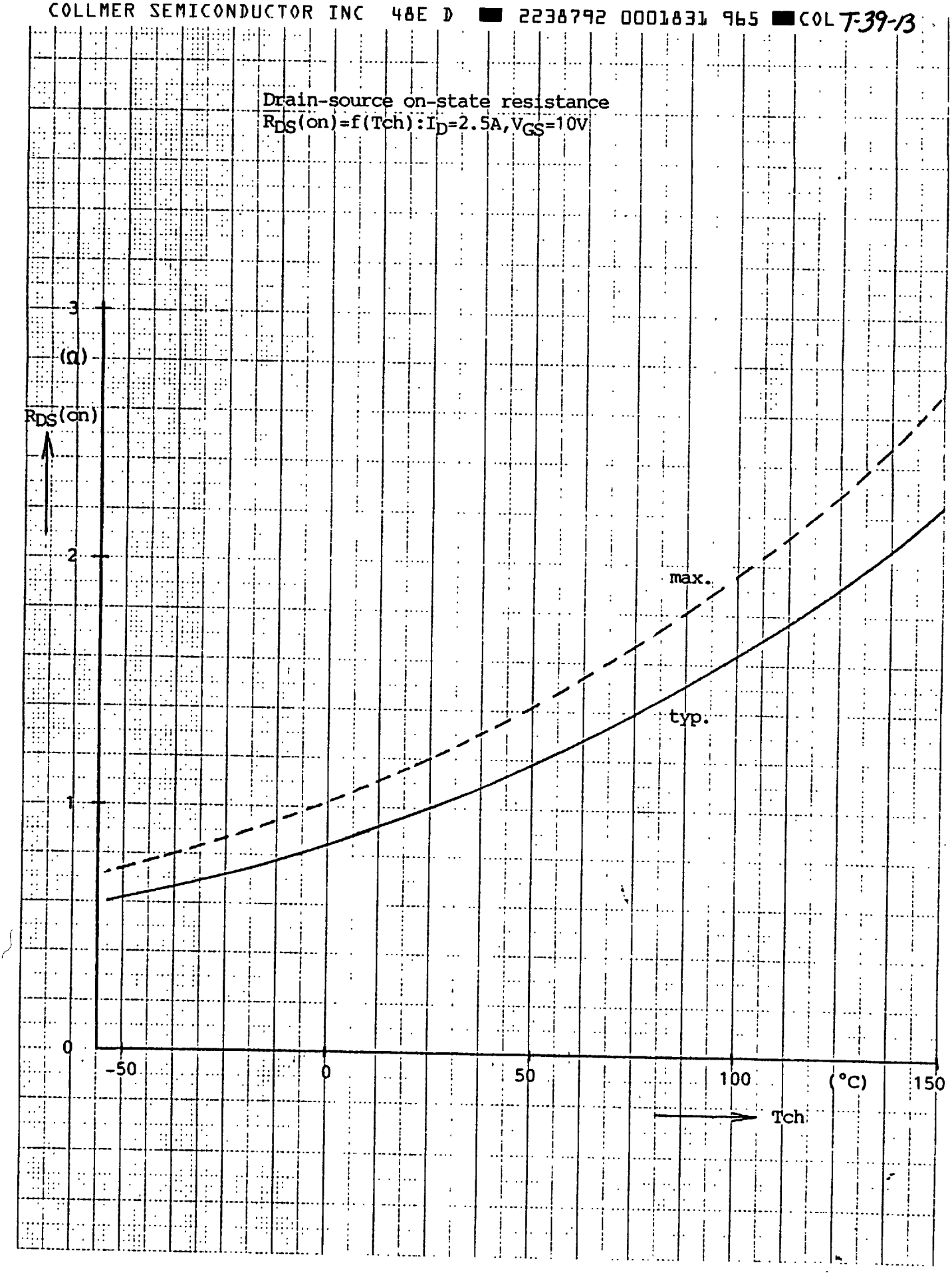
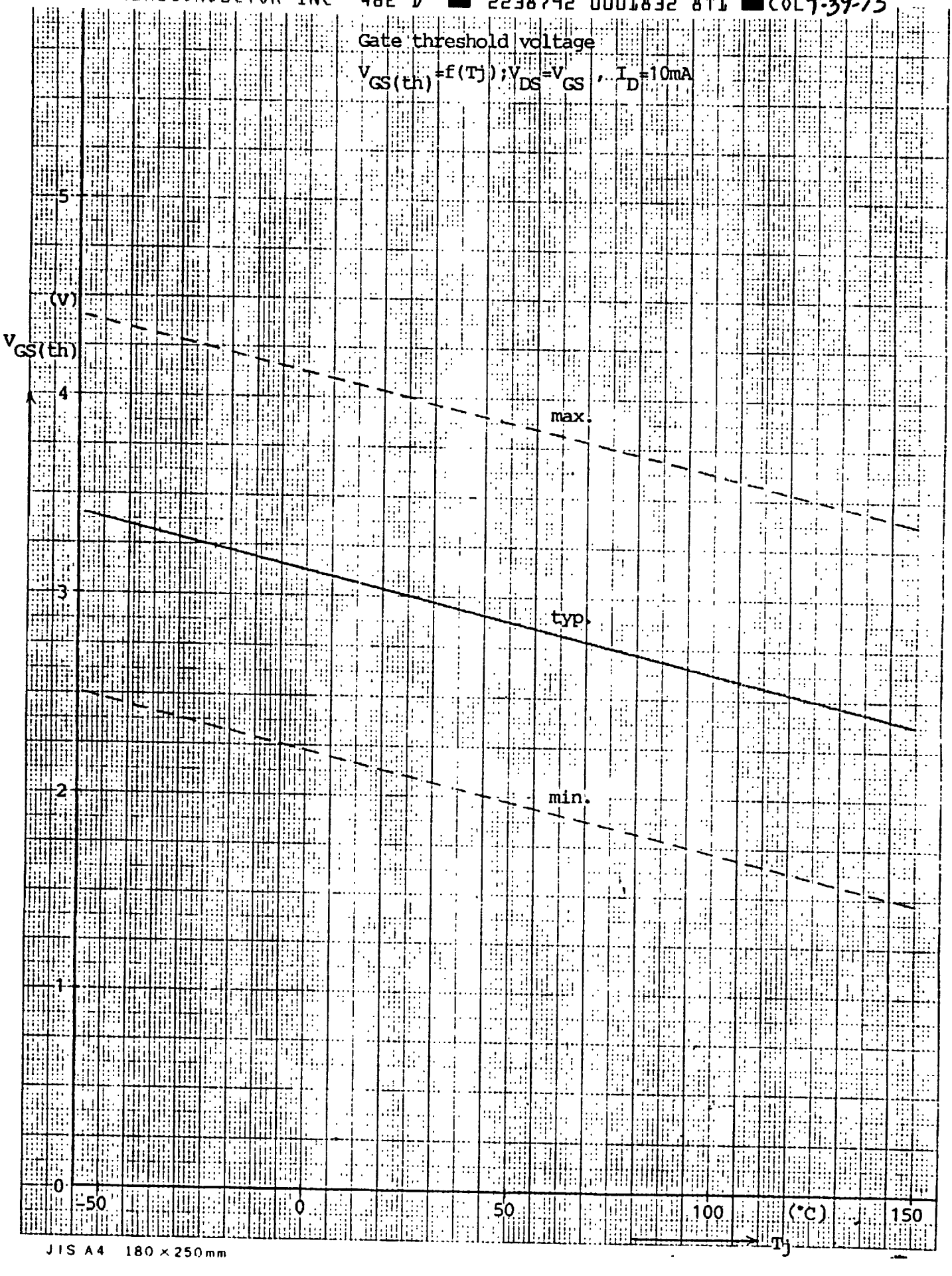
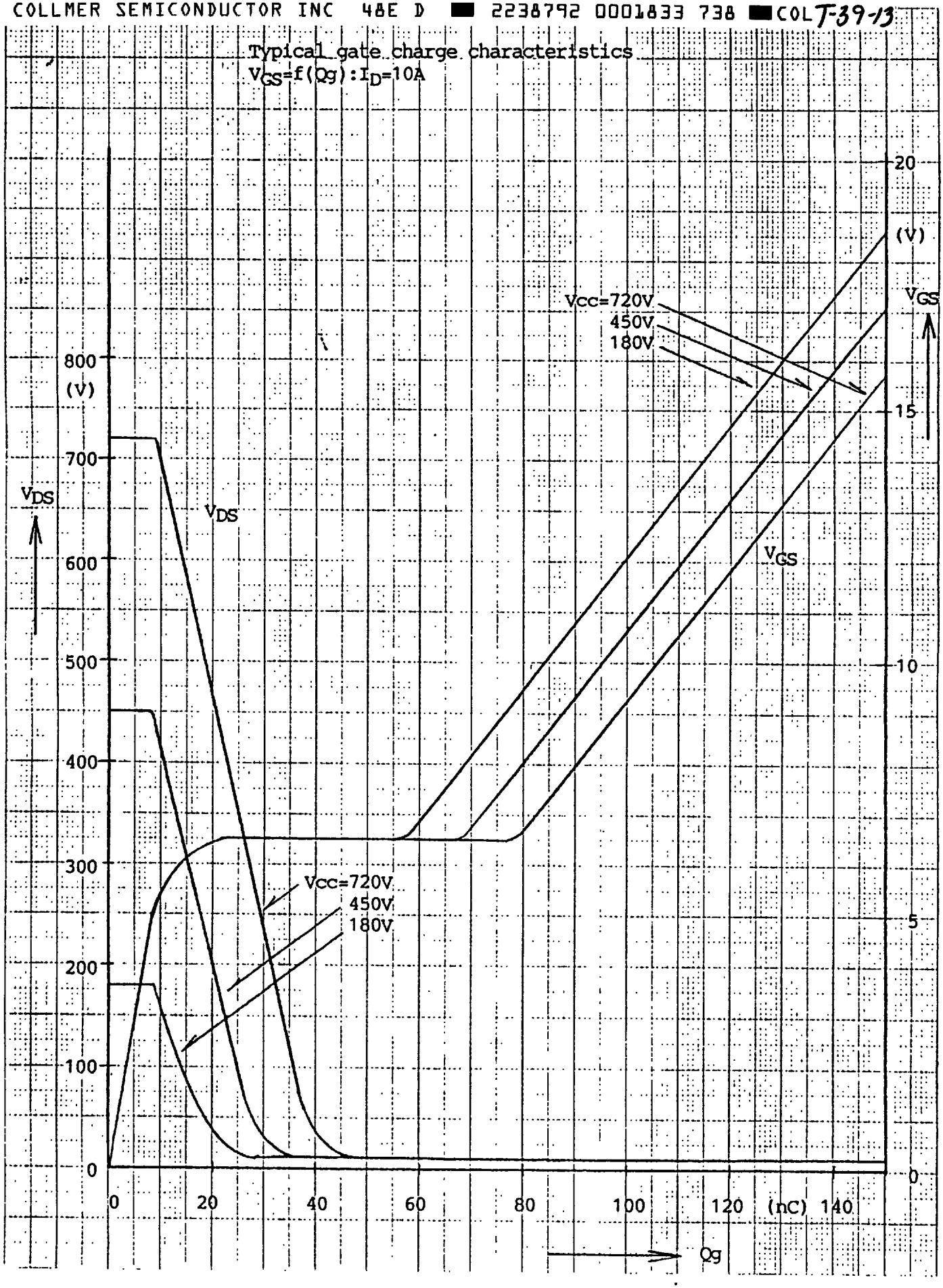

Drain-source on-state resistance
$R_{DS}(on)=f(Tch):I_D=2.5A,V_{GS}=10V$
3
(Ω)
$R_{DS}(on)$
2
1
0
max.
typ.
-50
0
50
100
(°C)
150
Tch




JIS A4 180 × 250mm



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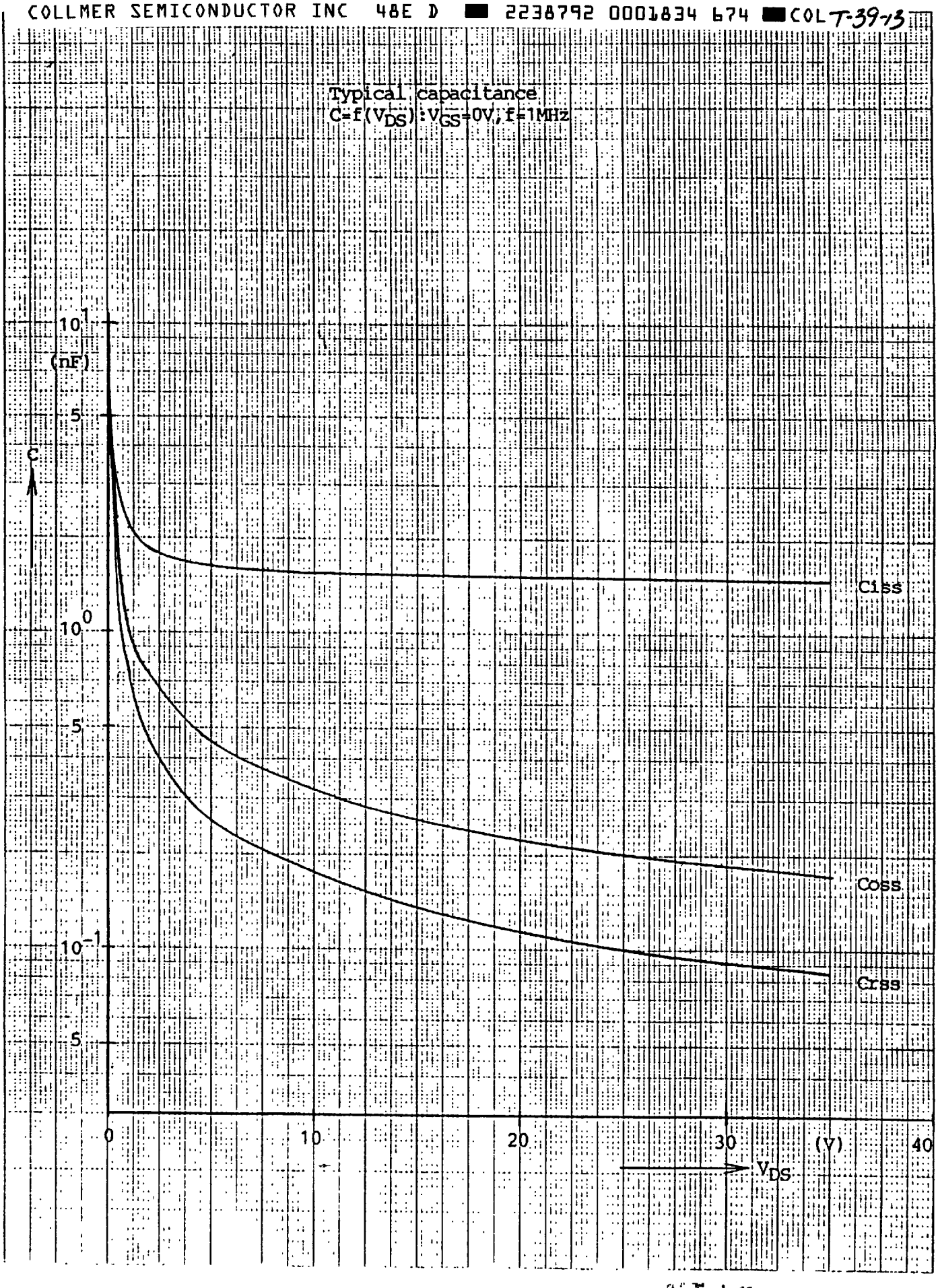


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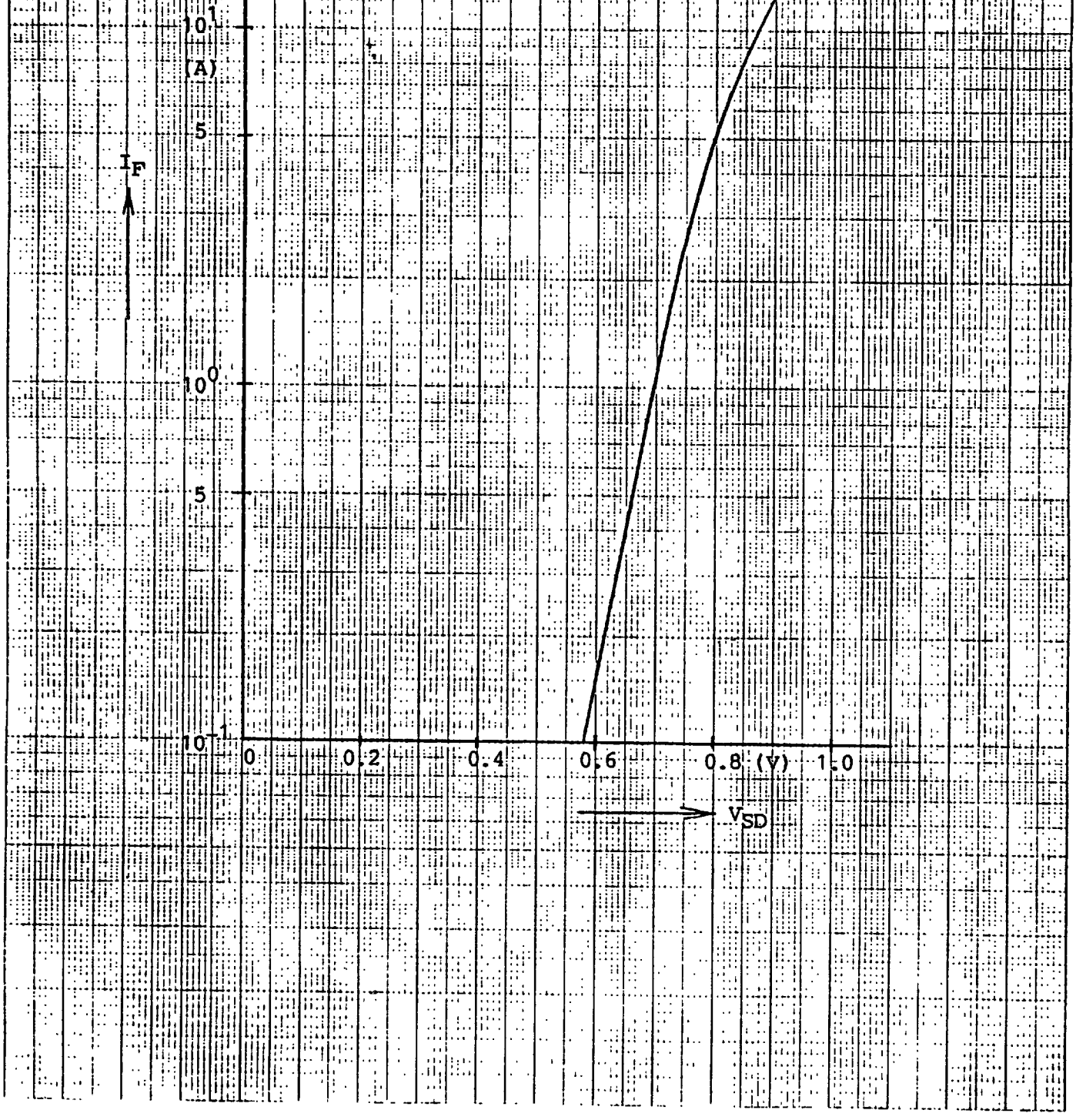
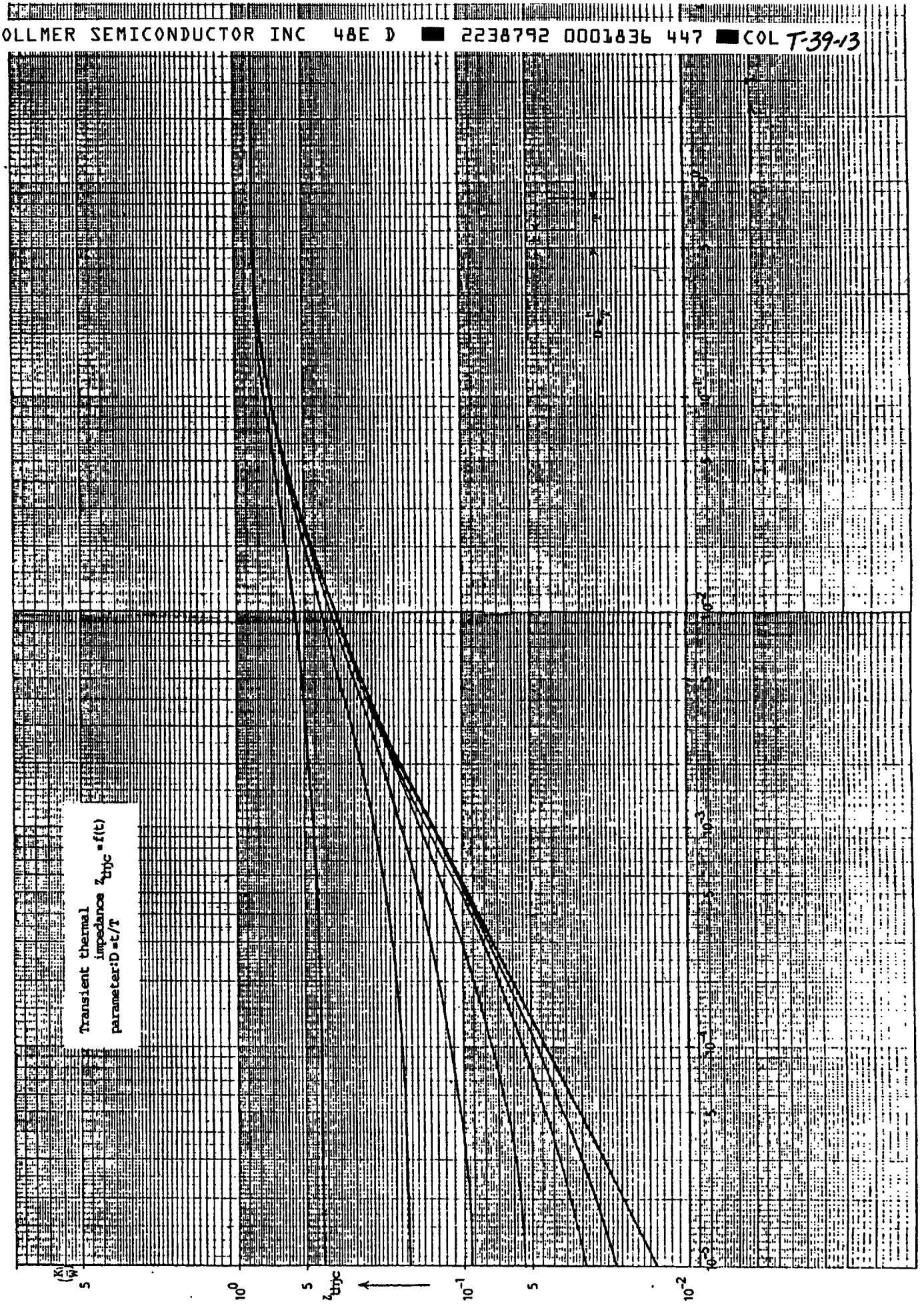
Forward characteristic of reverse diode
$I_F=f(V_{SD})$ 80µs pulse test, Tch=25°C



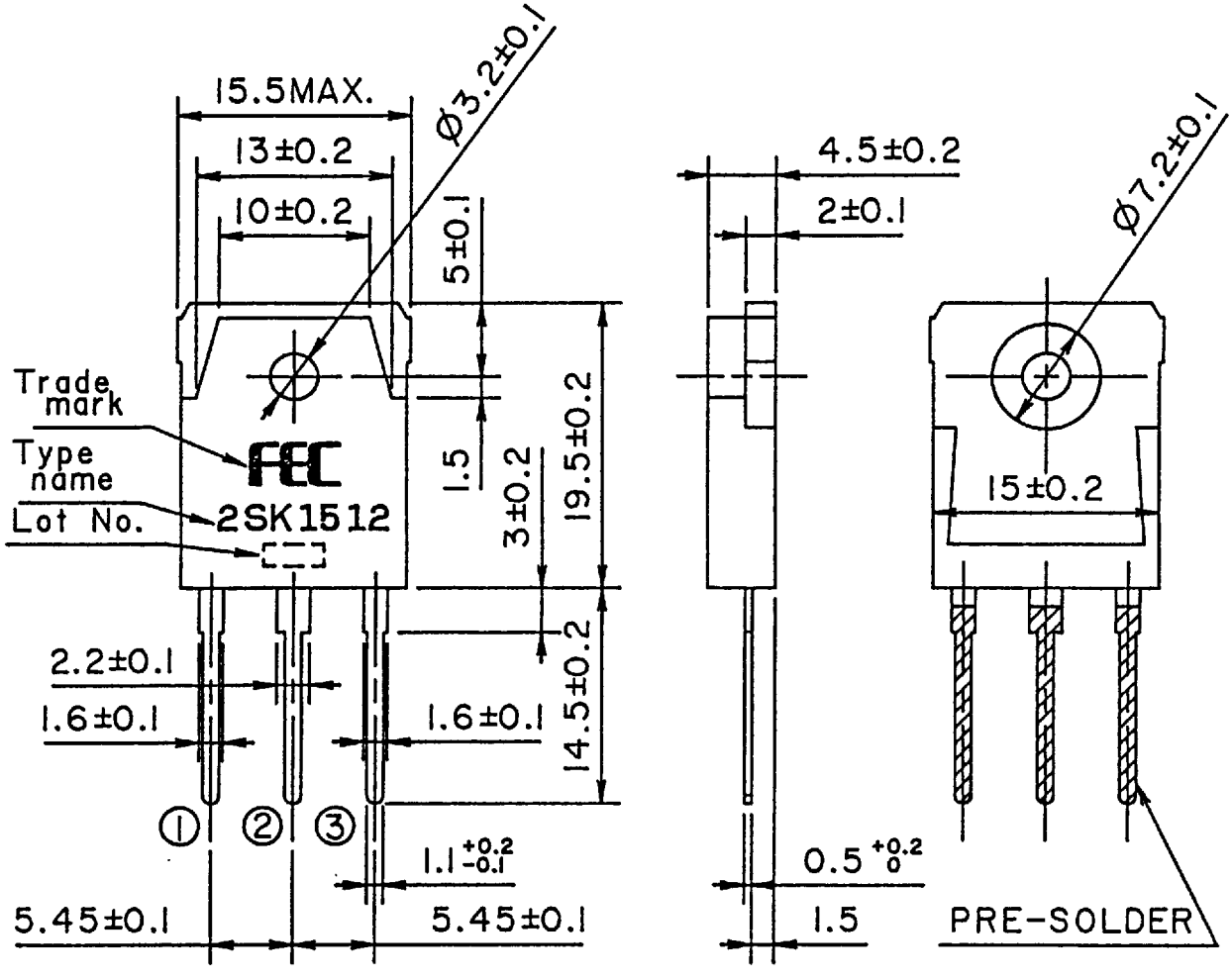



MT3F1797

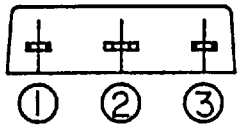

Transient thermal impedance $Z_{thjc} = f(t)$
parameter: $D = t/T$
$(\frac{K}{W})$
$Z_{thjc}$
$10^0$
$10^{-1}$
$10^{-2}$
5
$10^{-5}$
$10^{-4}$
$10^{-3}$
$10^{-2}$
$10^{-1}$
1
5
$10^0$
$10^1$
$10^2$
$10^3$
$10^4$
s

# FUJI POWER MOS FET

## TYPE : 2SK1512




DIMENSIONS ARE IN MILLIMETERS.




### CONNECTION

① GATE
② DRAIN
③ SOURCE

JEDEC : TO-228AA
EIAJ : SC-65



MS.TO3P.2SK1512-E

| | DATE | NAME | APPROVED |
|---|---|---|---|
| DRAWN | 1990-05-26 | MARUYAMA | M. Mujagi |
| CHECKED | 1990-05-26 | ARAI | |

REVISIONS

Fuji Electric Co.,Ltd.

DWG.NO. MK5C25624

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