

TARGET

CM800DU-12H

Pre.	N. Honda	Rev.	
Apr.	A. Takata 1-Sep-'98		

HIGH POWER SWITCHING USE

Notice : This is not a final specification. Some parametric limits are subject to change.

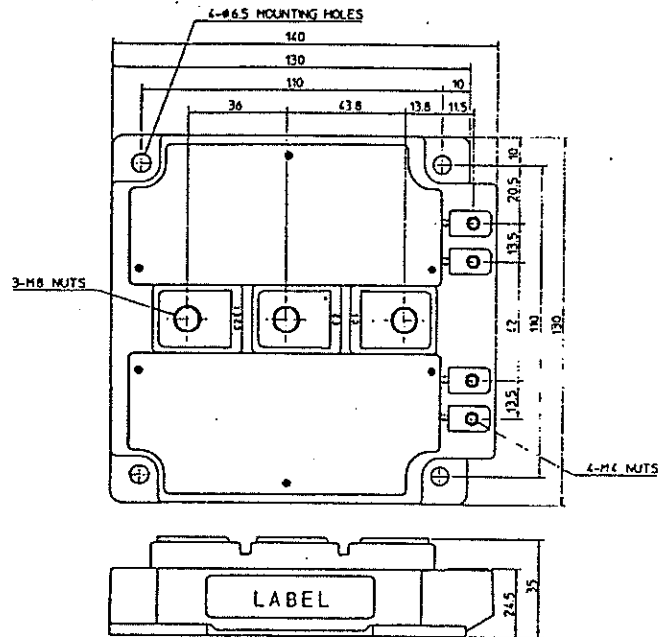
CM800DU-12H

- I_C 800A
- V_{CES} 600V
- Insulated Type
- 2-elements in a pack

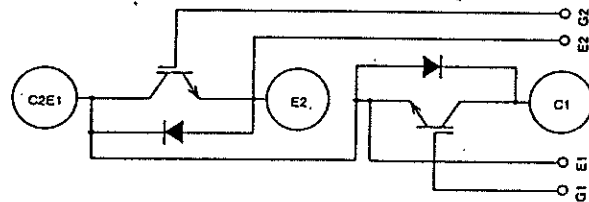
APPLICATION
General purpose inverters
& Servo controls, etc

OUTLINE DRAWING
(TENTATIVE)

Dimensions in mm



CIRCUIT DIAGRAM



ABSOLUTE MAXIMUM RATINGS ($T_j = 25^\circ C$)

Symbol	Item	Conditions	Ratings	Units
V_{CES}	Collector-emitter voltage	G-E Short	600	V
V_{GES}	Gate-emitter voltage	C-E Short	± 20	V
I_C	Collector current	$T_c = 25^\circ C$	800	A
I_{CM}		Pulse (2)	1600	
I_E (1)	Emitter current	$T_c = 25^\circ C$	800	A
I_{EM} (1)		Pulse (2)	1600	
P_C (3)	Maximum collector dissipation	$T_c = 25^\circ C$	(2100)	W
T_j	Junction temperature		-40 -- +150	$^\circ C$
T_{stg}	Storage temperature		-40 -- +125	$^\circ C$
Viso	Isolation voltage	Main terminal to base plate, AC 1 min.	2500	V
-	Torque strength	Main Terminal M 8	8.8 ~ 10.8	N-m
		Mounting holes M 6	3.5 ~ 4.5	
		G(E) terminal M 4	1.3 ~ 1.7	
-	Weight	Typical value	-	g



ELECTRICAL CHARACTERISTICS ($T_j = 25\text{ }^\circ\text{C}$)

Symbol	Item	Conditions	Min.	Typ.	Max.	Units
I_{CES}	Collector cutoff current	$V_{CE}=V_{CES}, V_{GE}=0V$	-	-	2	mA
$V_{GE(th)}$	Gate-emitter threshold voltage	$I_C=80\text{ mA}, V_{CE}=10V$	4.5	6	7.5	V
I_{GES}	Gate leakage current	$V_{GE}=V_{CES}, V_{CE}=0V$	-	-	0.5	μA
$V_{CE(sat)}$	Collector to emitter saturation voltage	$T_j = 25\text{ }^\circ\text{C}$	-	2.4	3.0	V
		$T_j = 125\text{ }^\circ\text{C}$	-	2.6	-	
C_{ies}	Input capacitance	$V_{CE}=10V$	-	-	70.4	nF
C_{oes}	Output capacitance	$V_{GE}=0V$	-	-	38.4	
C_{res}	Reverse transfer capacitance		-	-	10.4	
Q_G	Total gate charge	$V_{CC}=300V, I_C=800A$ $V_{GE}=15V$	-	1600	-	nC
$t_d(on)$	Turn-on delay time	$V_{CC}=300V, I_C=800A$	-	-	-	ns
t_r	Turn-on rise time	$V_{GE1}=V_{GE2}=15V$	-	-	-	
$t_d(off)$	Turn-off delay time	$R_G=\Omega$, Resistive load	-	-	-	
t_f	Turn-off fall time	switching operation	-	-	-	
V_{EC} ①	Emitter-collector voltage	$I_E=800\text{ A}, V_{GE}=0V$	-	-	2.6	V
t_{rr} ①	Reverse recovery time	$I_E=800\text{ A}$	-	-	160	ns
Q_{rr} ①	Reverse recovery charge	$di/dt=-1600\text{ A}/\mu\text{s}$	-	1.92	-	μC
$R_{th(j-c)Q}$	Thermal resistance	IGBT part(1/2 module)	-	-	(0.06)	$^\circ\text{C}/\text{W}$
$R_{th(j-c)R}$		FWDi part(1/2 module)	-	-	(0.09)	
$R_{th(c-f)}$	Contact thermal resistance	Case to fin, Thermal compound applied(1/2 module)	-	(0.019)	-	

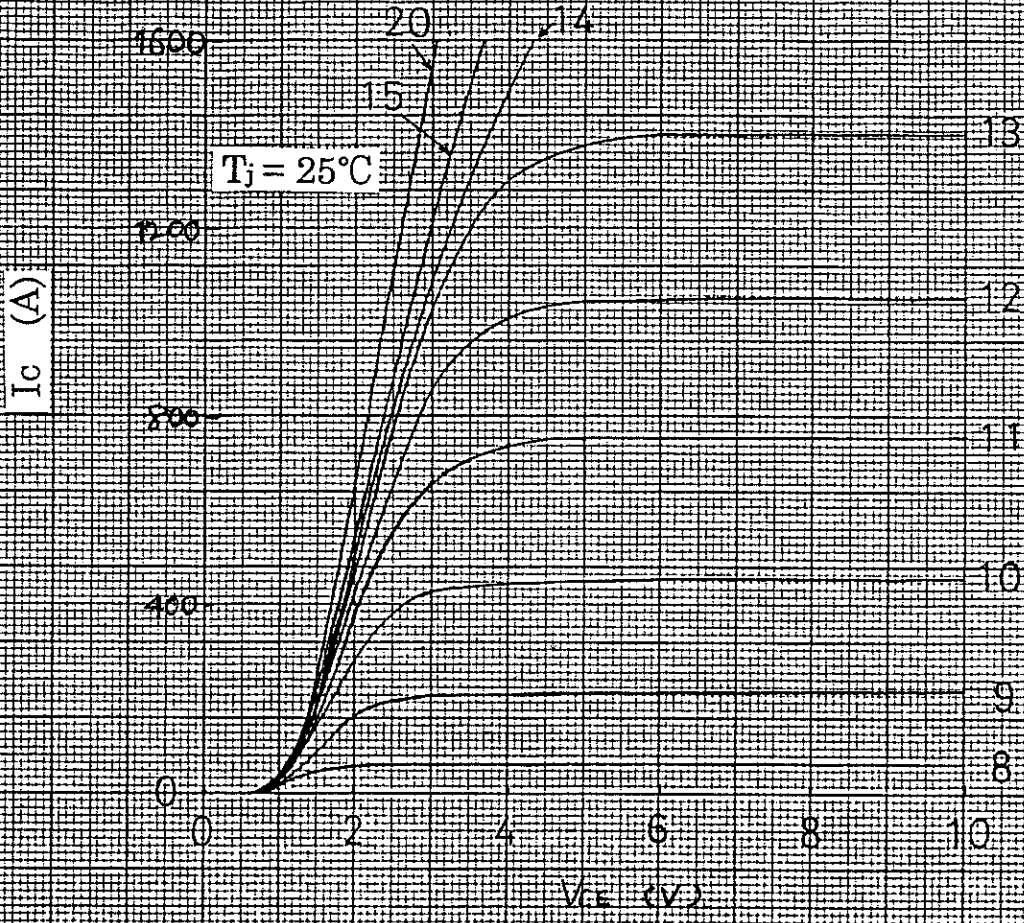
- ① $I_E, V_{EC}, t_{rr}, Q_{rr}$ & di/dt represent characteristics of the anti-parallel, emitter to collector free-wheel diode (FWDi).
- ② Pulse width and repetition rate should be such that the device junction temp. (T_j) does not exceed T_{jmax} rating.
- ③ Junction temperature (T_j) should not increase beyond 150°C .
- ④ Pulse width and repetition rate should be such as to cause negligible temperature rise.

APPLICATION NOTE

Prepared by N. Honda
Approved by M. Tabata 20-Jan-79

OUTPUT CHARACTERISTICS (TYPICAL)

CM80000-12H



CMH-3338

APPLICATION NOTE

CURVE NO.

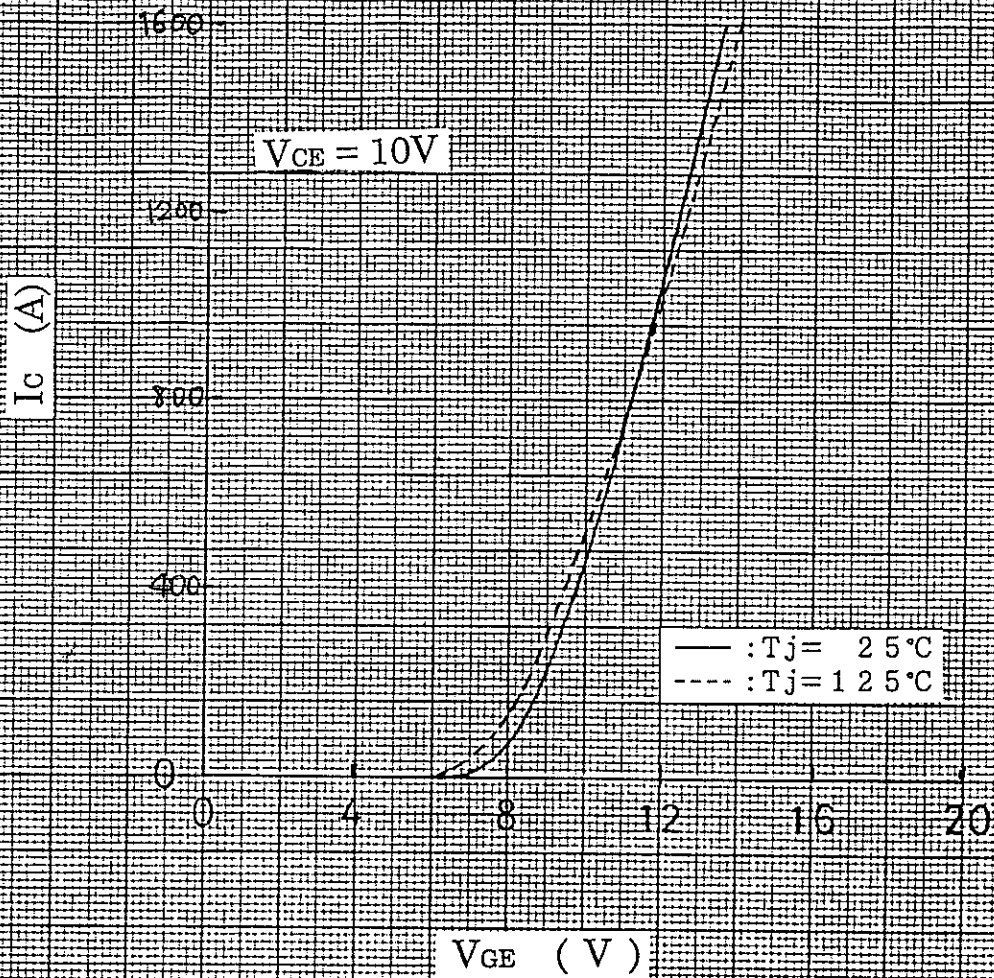
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APPLICATION NOTE

TRANSFER CHARACTERISTICS
(TYPICAL)

CM800DU-12H



CMH-3338

APPLICATION NOTE

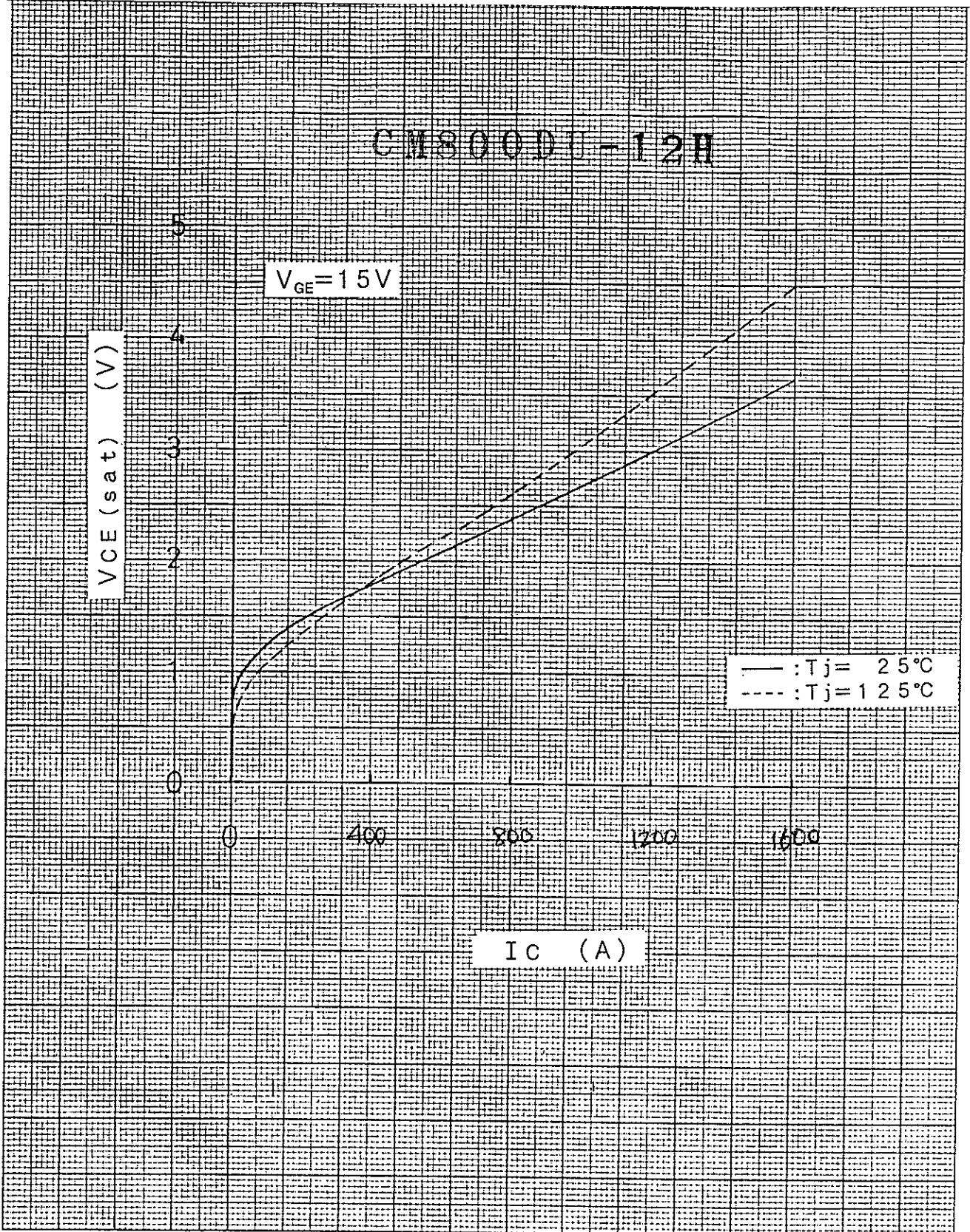
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DATE

APPLICATION NOTE

COLLECTOR-EMITTER SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)



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APPLICATION NOTE

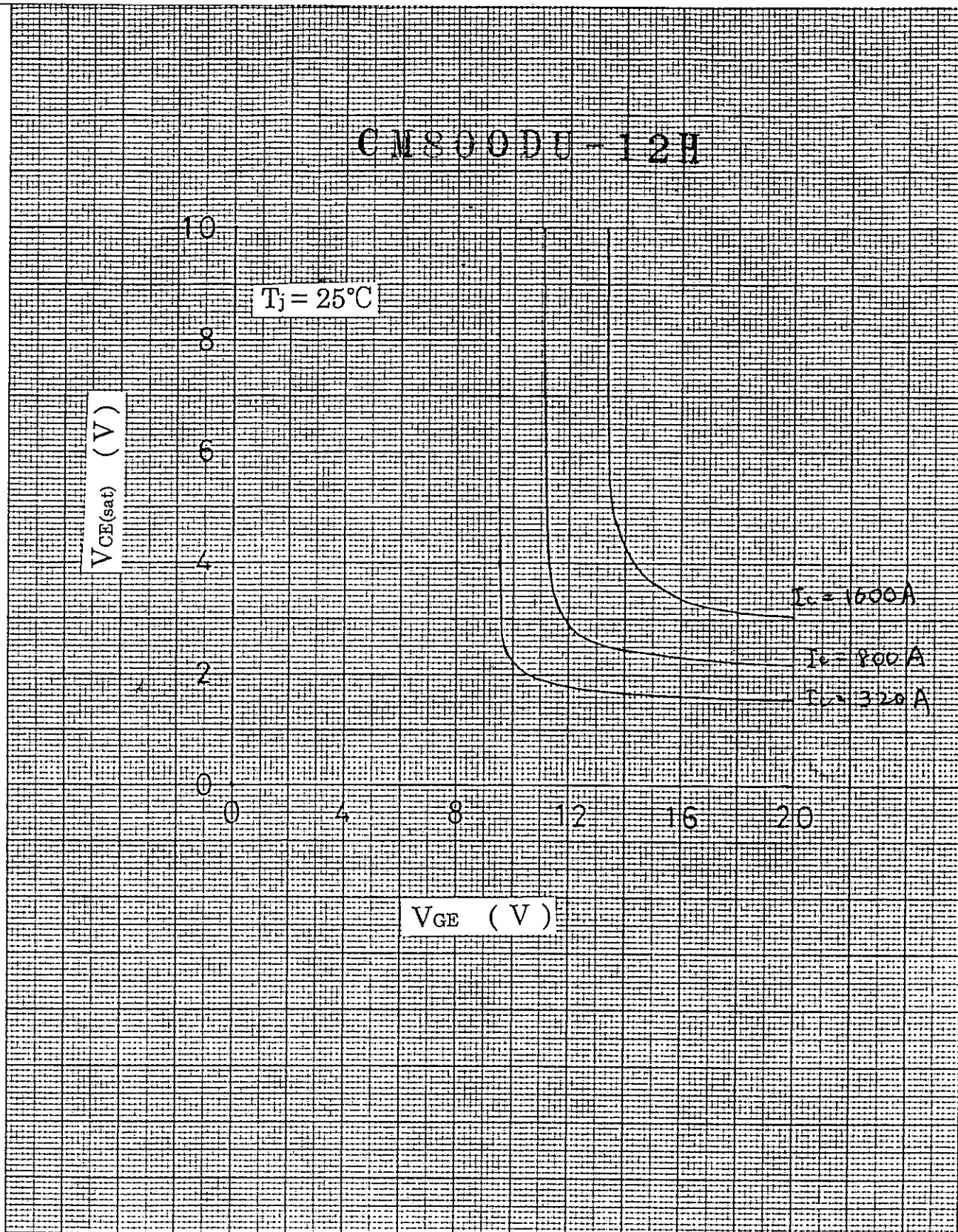
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APPLICATION NOTE

COLLECTOR-EMITTER SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)



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APPLICATION NOTE

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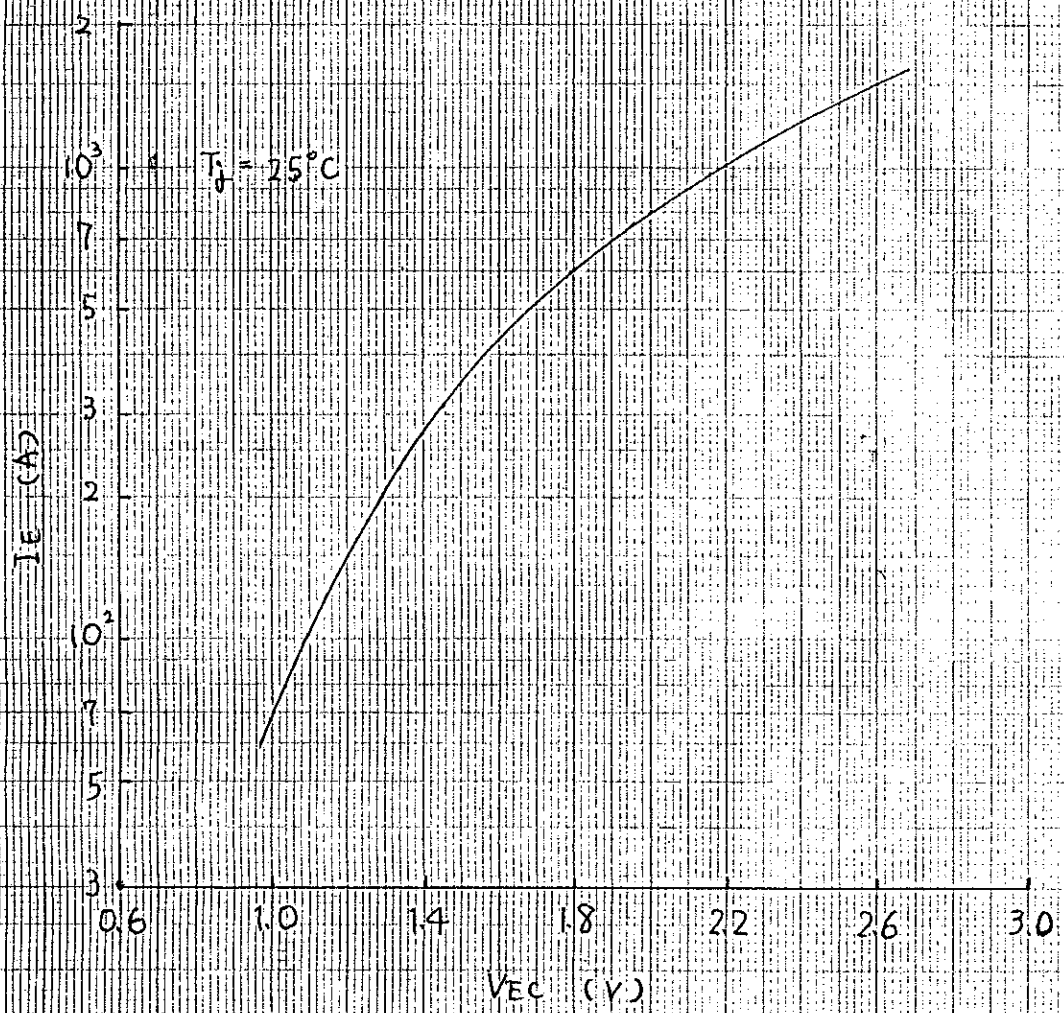
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APPLICATION NOTE

Free-wheel diode forward characteristics
(Typical)

CMH00DU-12H



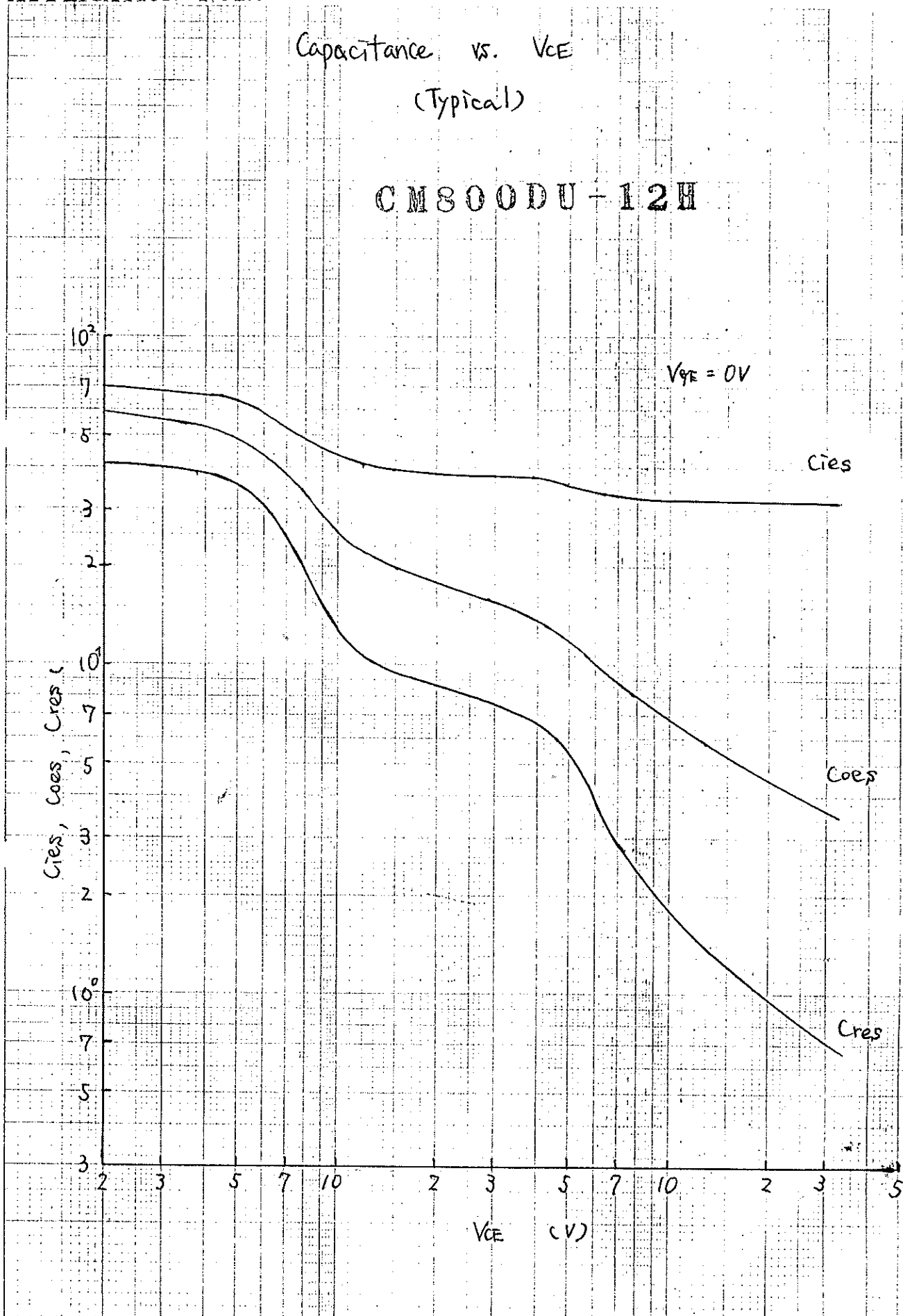
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APPLICATION NOTE

APPLICATION NOTE

Capacitance vs. V_{CE}
(Typical)

CM800DU-12H



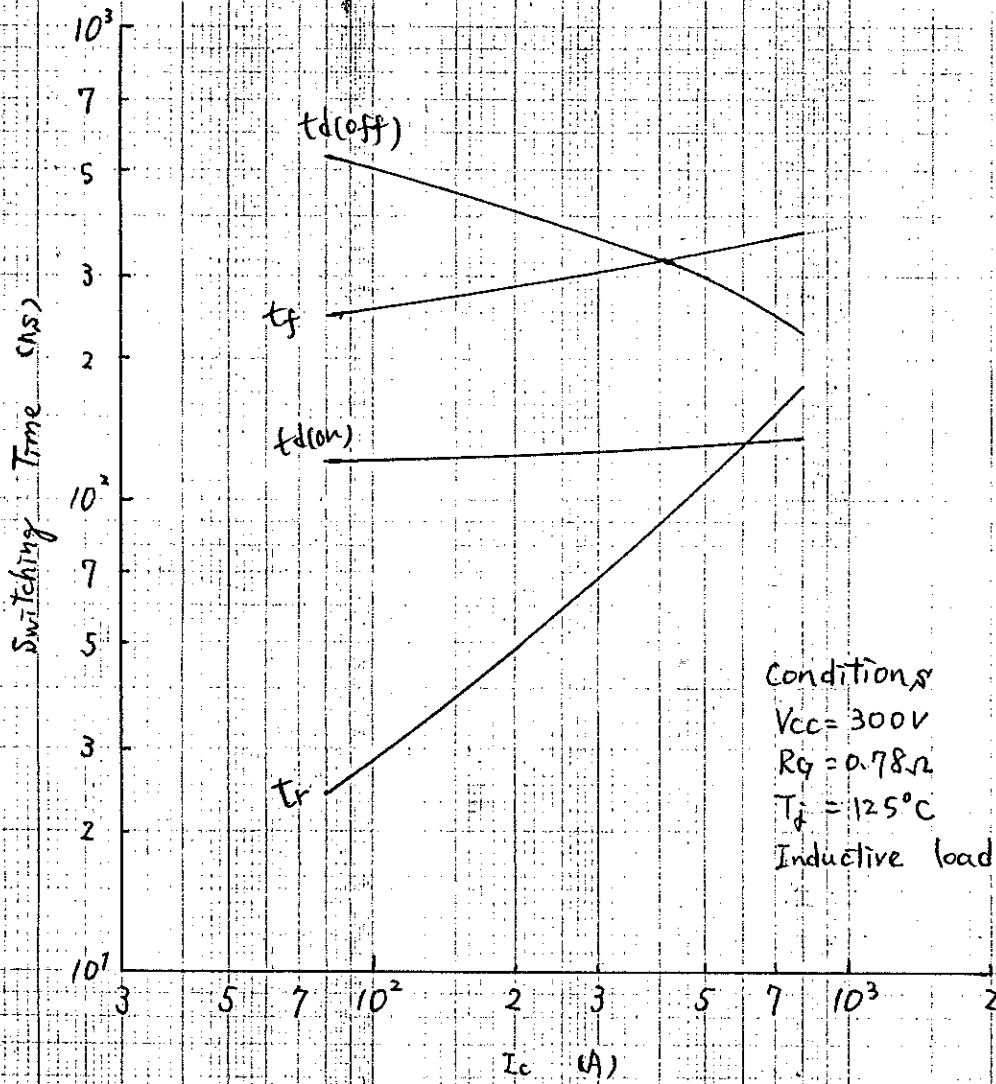
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APPLICATION NOTE

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Half-bridge Switching characteristics
(Typical)

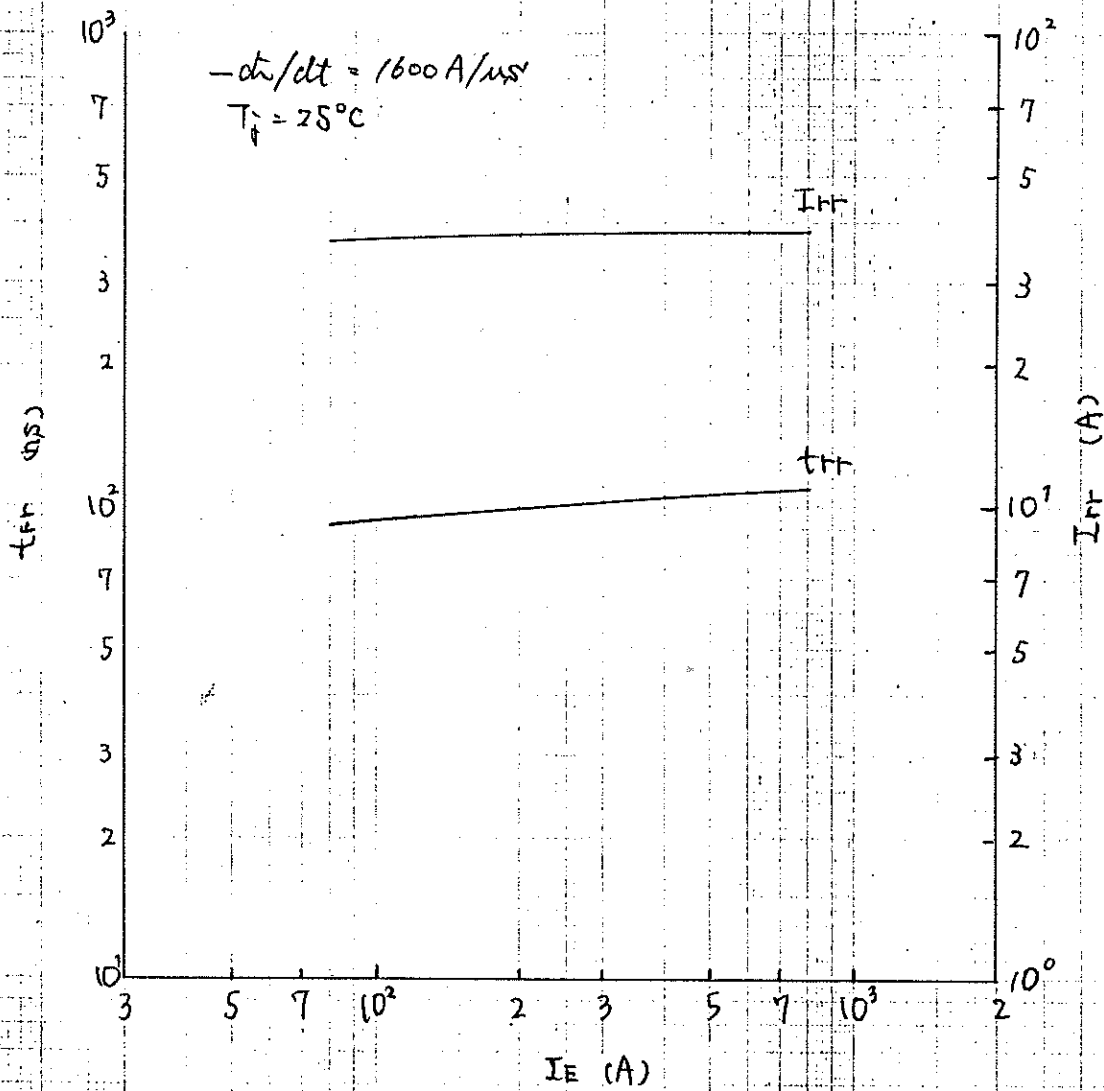
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APPLICATION NOTE

Reverse recovery characteristics of Free-wheel diode
(Typical)

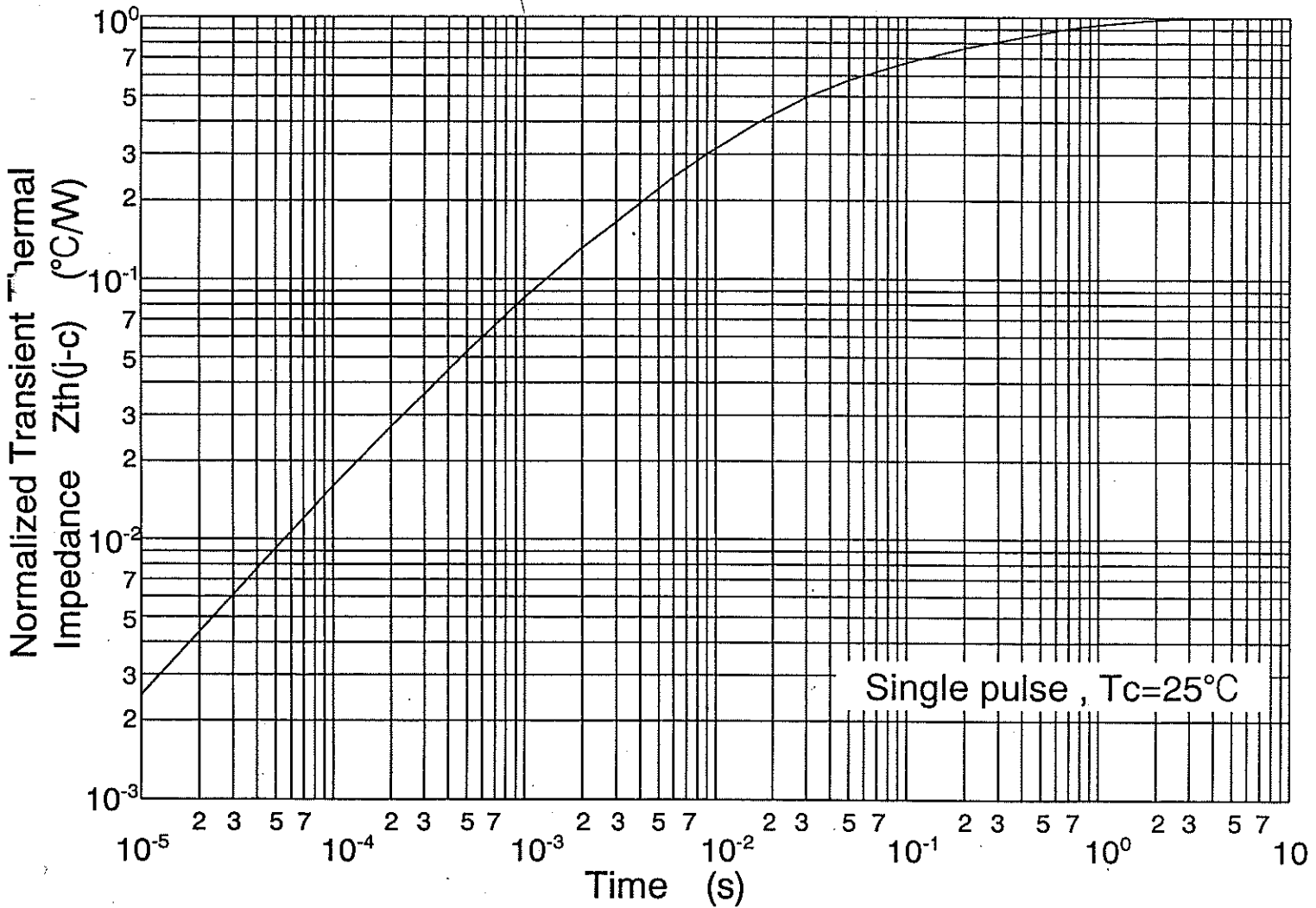
CM800DU-12H



MITSUBISHI ELECTRIC CORPORATION

APPLICATION NOTE	Prepared by		Rev	
	Approved by			

Transient Thermal Impedance Characteristics
(IGBT part & FWD part)
CM800DU-12H



IGBT part :

Per unit base= $R_{th(j-c)}=0.06^\circ\text{C/W}$

FWD part :

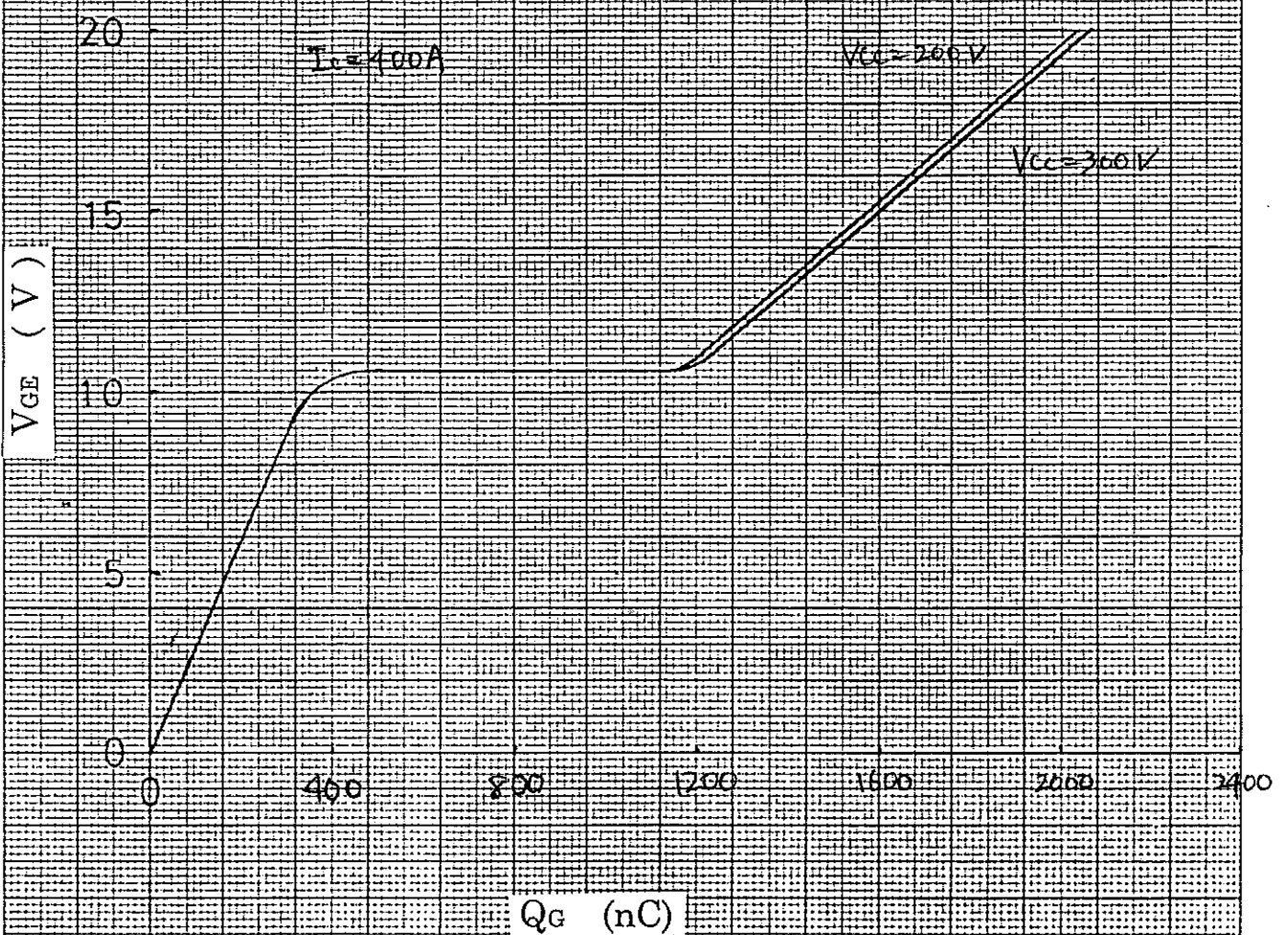
Per unit base= $R_{th(j-c)}=0.09^\circ\text{C/W}$

IGBT Module	CMH-3338-	APPLICATION NOTE
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APPLICATION NOTE

V_{GE} VS. GATE CHARGE
(TYPICAL)

CM8000U-12H



CMH-3338

APPLICATION NOTE

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(10/10)

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