

MGD623N

July, 2009

■Features

- Low Saturation Voltage $V_{CE(sat)}=1.7V$ typ.
- High Speed $t_f=200ns$ typ.
- Low V_F FRD Included $V_F=1.2V$ typ.

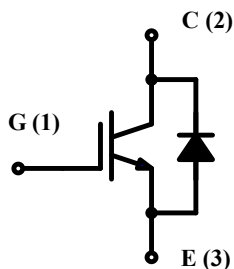
■Applications

- Current Resonance Inverter Switching
- Induction Heating Cooking

■Package----TO-3P



■Equivalent circuit



Absolute maximum ratings

(Ta=25°C)

Characteristic	Symbol	Rating	Unit
Collector to Emitter Voltage	V_{CES}	600	V
Gate to Emitter Voltage	V_{GES}	± 30	V
Continuous Collector Current	I_C	50	A
Pulsed Collector Current	$I_C(\text{pulse})^1$	100	A
Diode Continuous Forward Current	I_F	30	A
Diode pulsed Forward Current	$I_F(\text{pulse})^1$	60	A
Maximum Power Dissipation	P_C	150 (Tc=25°C)	W
Thermal Resistance IGBT	θ_{j-c} IGBT	0.833	°C/W
Thermal Resistance Di	θ_{j-c} Di	1.67	°C/W
Junction Temperature	T_j	150	°C
Storage Temperature	T_{stg}	-55 to 150	°C

1) $PW \leq 1ms$, Duty cycle $\leq 1\%$

Electrical characteristics

●IGBT

(Ta=25°C)

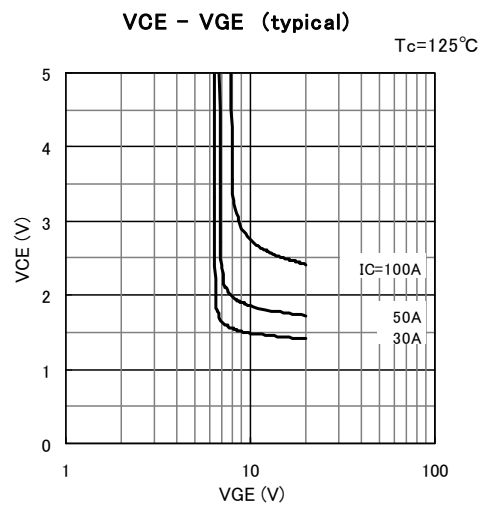
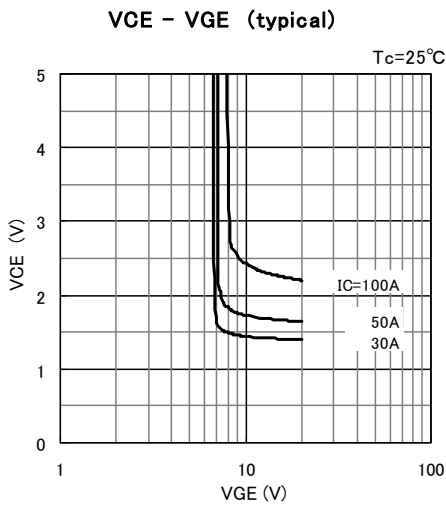
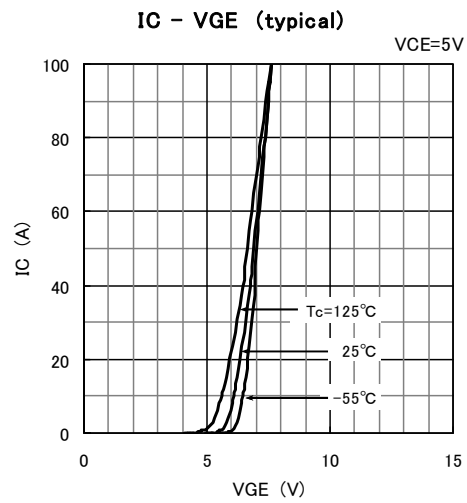
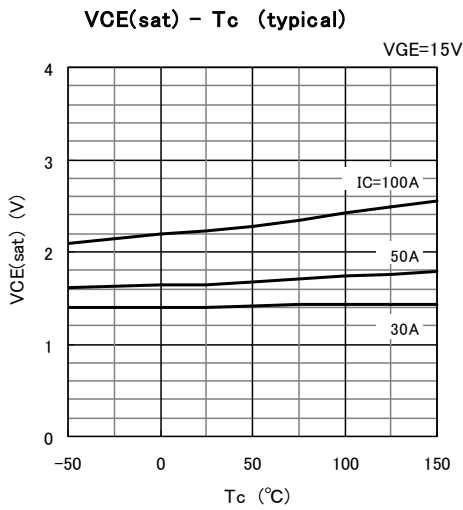
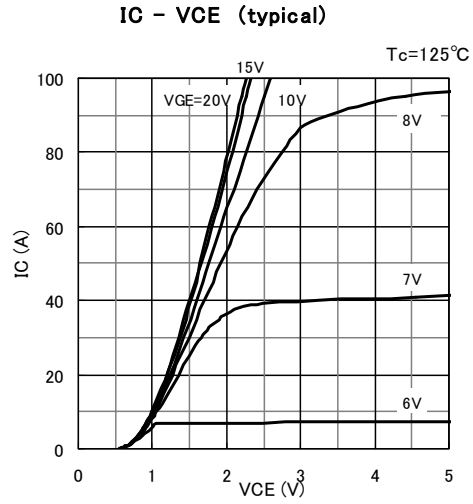
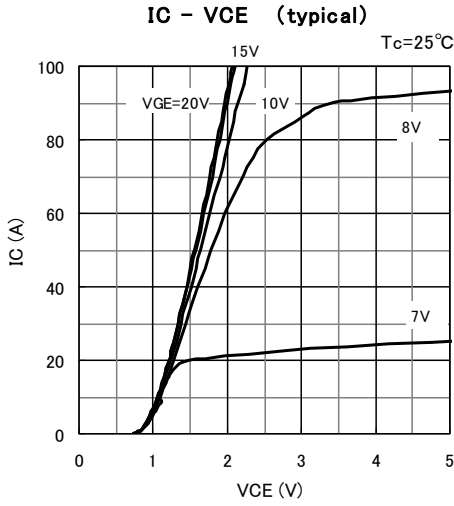
Characteristic	Symbol	Test Conditions	Limits			Unit
			MIN.	TYP.	MAX.	
Collector to Emitter Breakdown Voltage	V(BR)CES	IC=100μA, VGE=0V	600			V
Gate to Emitter Leakage Current	IGES	VGE=±30V			±500	nA
Collector to Emitter Leakage Current	ICES	VCE=600V, VGE=0V			100	μA
Gate Threshold Voltage	VGE(th)	VCE=10V, IC=1mA	3		6	V
Collector to Emitter Saturation Voltage	VCE(sat)	VGE=15V, IC=50A		1.7	2.3	V
Input Capacitance	Cies	VDS=20V VGS=0V f=1MHz		2500		pF
Output Capacitance	Coes			150		
Reverse Transfer Capacitance	Cres			80		
Turn-On Delay Time	td(on)	Inductive Load IC=50A VCC=300V VGS=15V, Rg=39Ω See Fig.1		75		ns
Rise Time	tr			100		
Turn-Off Delay Time	td(off)			300		
Fall Time	tf			200		

●Di

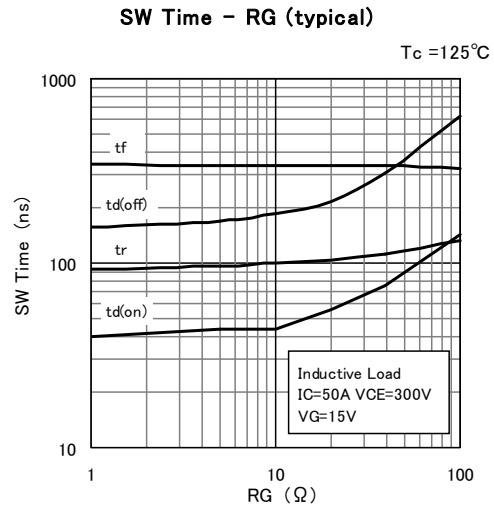
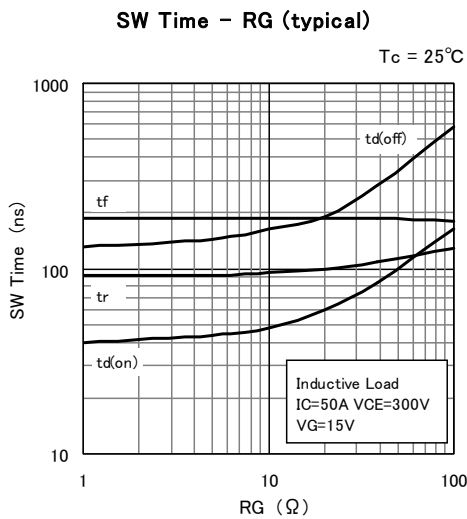
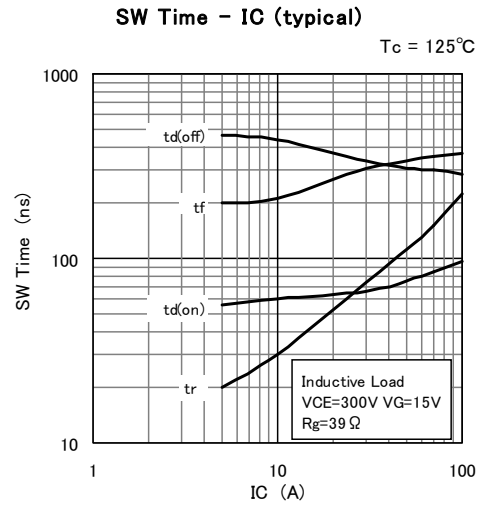
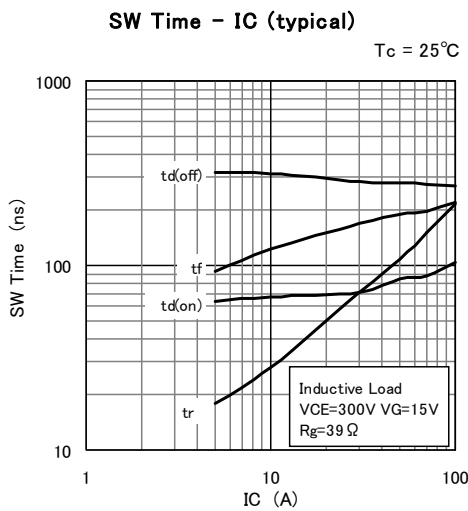
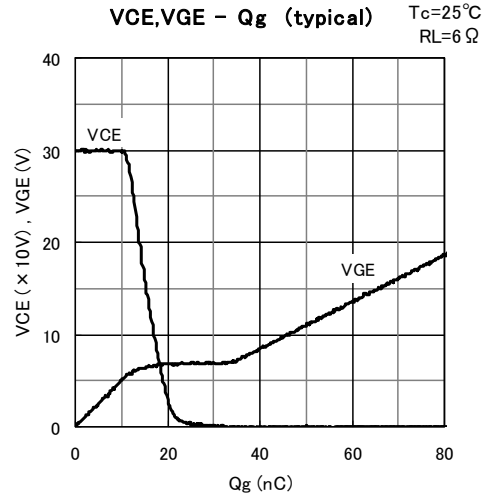
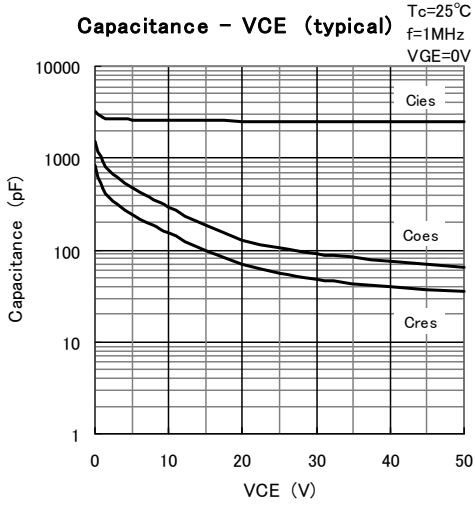
(Ta=25°C)

Characteristic	Symbol	Test Conditions	Limits			Unit
			MIN.	TYP.	MAX.	
Forward Voltage	VF	IF=30A		1.2	1.6	V
Reverse Recovery Time	trr	IF=30A di/dt=100A/μs		0.3		μs

Characteristic Curves

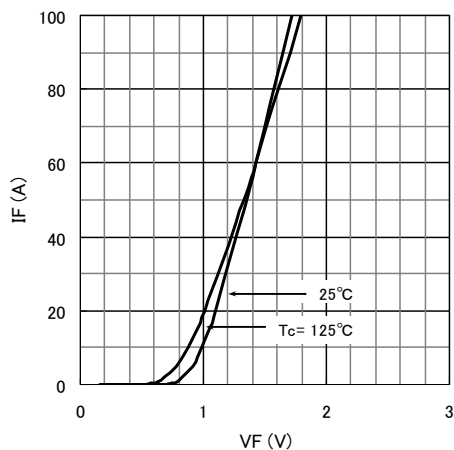


Characteristic Curves

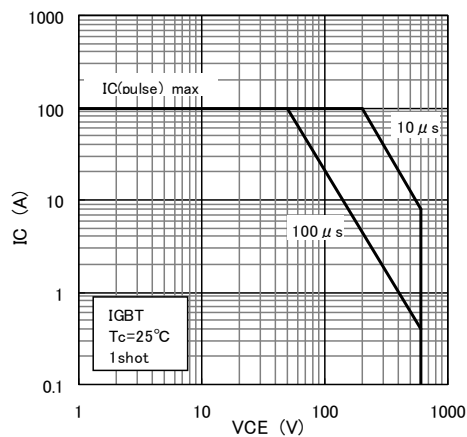


Characteristic Curves

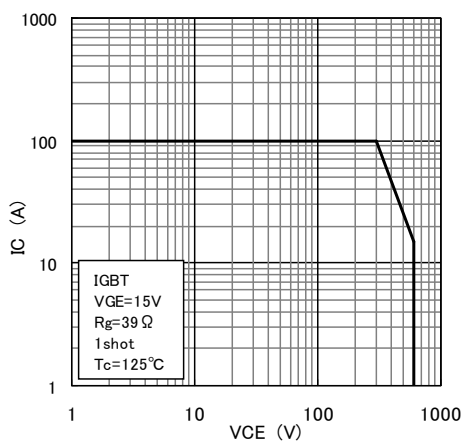
IF - VF (typical)



SAFE OPERATING AREA



Reverse Bias ASO



TRANSIENT THERMAL RESISTANCE - PULSE WIDTH

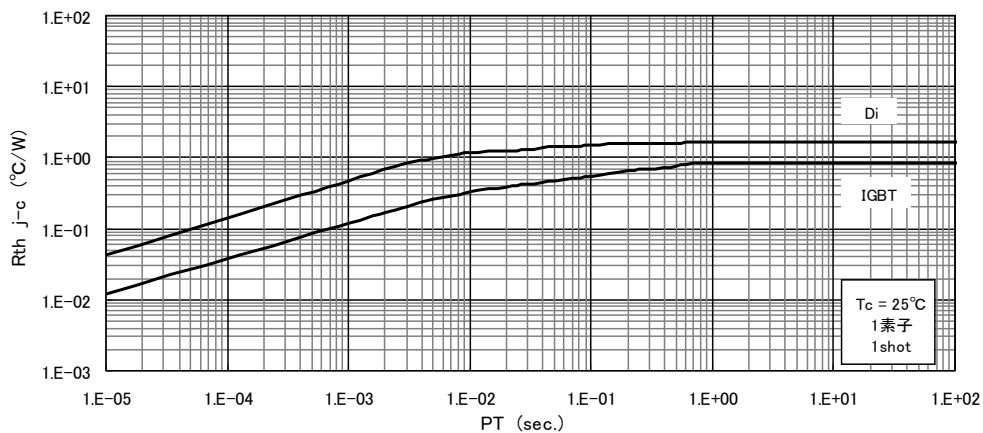
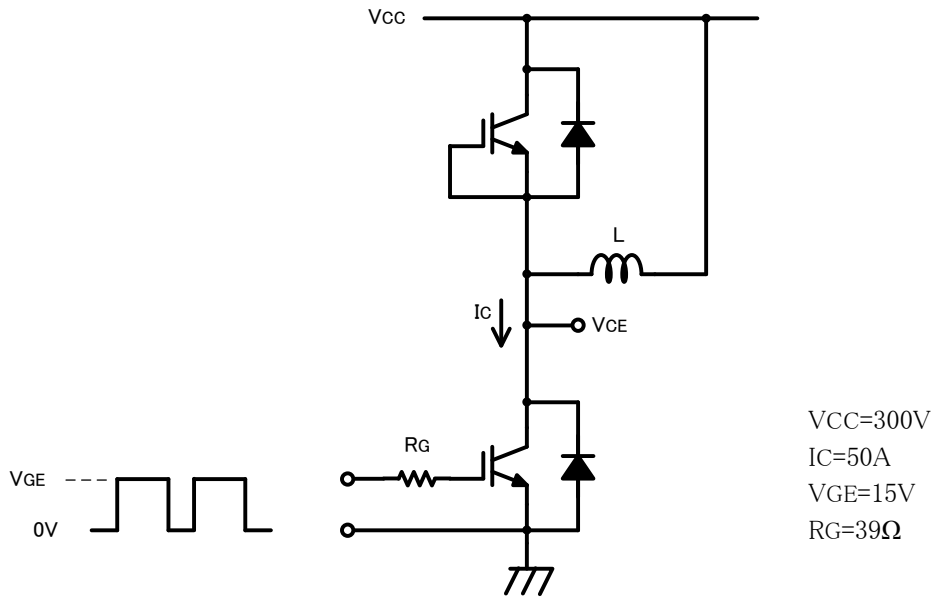
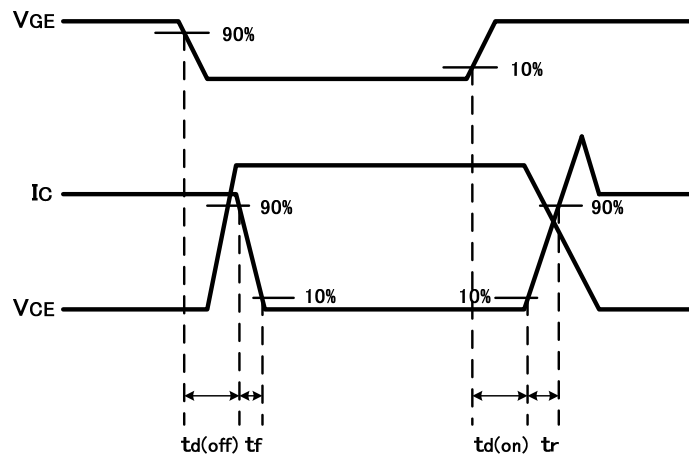


Fig.1 Switching Time Test Method



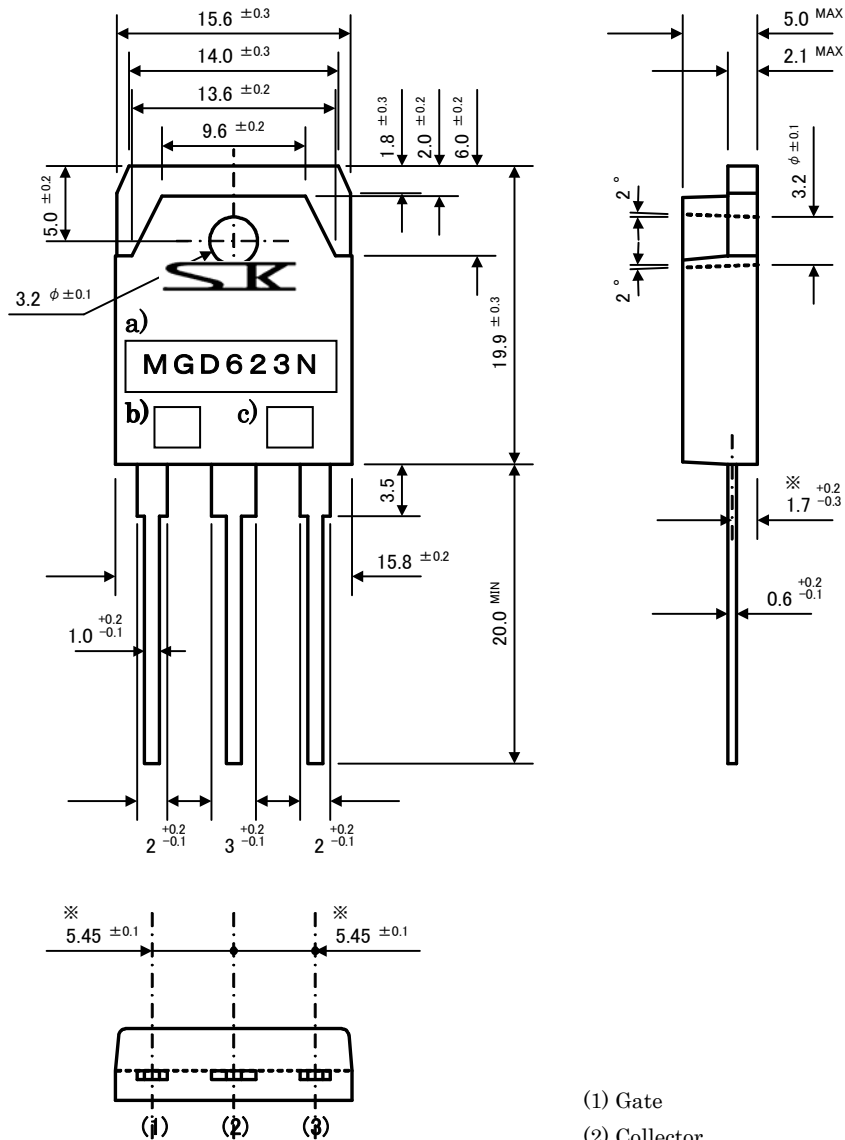
(a) Test Circuit



(b) Waveforms

Outline

TO-3P



Weight Approx. 6g

- (1) Gate
- (2) Collector
- (3) Emitter

<Worldwide Contacts>**Asia Pacific****China****Sanken Electric Hong Kong Co., Ltd.**

Suite 1026 Ocean Centre, Canton Road, Tsimshatsui, Kowloon, Hong Kong

Tel: 852-2735-5262

Fax: 852-2735-5494

Sanken Electric (Shanghai) Co., Ltd.

Room3202, Maxdo Centre, Xingyi Road 8, Changning district, Shanghai, China

Tel: 86-21-5208-1177

Fax: 86-21-5208-1757

India**Saket Devices Pvt. Ltd.**

Office No.13, First Floor, Bandal - Dhankude Plaza, Near PMT Depot, Paud Road, Kothrud, Pune - 411 038, India

Tel: 91-20-5621-2340

91-20-2528-5449

Fax: 91-20-2528-5459

Japan**Sanken Electric Co., Ltd. Overseas Sales Headquarters**

Metropolitan Plaza Bldg. 1-11-1 Nishi-Ikebukuro, Toshima-ku, Tokyo 171-0021, Japan

Tel: 81-3-3986-6164

Fax: 81-3-3986-8637

Korea**Sanken Electric Korea Co., Ltd.**

Mirae Asset Life Bldg. 6F, 168 Kongduk-dong, Mapo-ku, Seoul, 121-705, Korea

Tel: 82-2-714-3700

Fax: 82-2-3272-2145

Singapore**Sanken Electric Singapore Pte. Ltd.**

150 Beach Road, #14-03 The Gateway West, Singapore 189720

Tel: 65-6291-4755

Fax: 65-6297-1744

Malaysia**Sanken Electric Singapore Pte. Ltd.****Malaysia Representative Office**

Block B-20-5, Level 20, Northpoint Midvalley City, No.1, Medan Syed Putra Utara, 59200 Kuala Lumpur, Malaysia

TEL:60-3-2284-1769

FAX:60-3-2282-6345

Taiwan**Taiwan Sanken Electric Co., Ltd.**

Room 1801, 18th Floor, 88 Jung Shiau East Road, Sec. 2, Taipei 100, Taiwan R.O.C.

Tel: 886-2-2356-8161

Fax: 886-2-2356-8261

Europe

United Kingdom

Sanken Power Systems (UK) Limited

Pencoed Technology Park, Pencoed, Bridgend CF35 5HY. UK

Tel: 44-1656-869-100

Fax: 44-1656-869-162

North America

United States

Allegro MicroSystems, Inc.

115 Northeast Cutoff, Worcester, Massachusetts 01606, U.S.A.

Tel: 1-508-853-5000

Fax: 1-508-853-3353

Allegro MicroSystems, Inc. (Southern California)

14 Hughes Street, Suite B105, Irvine, CA 92618

Tel: 1-949-460-2003

Fax: 1-949-460-7837

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