



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

TIG110GMH — High Power High Speed Switching Applications

N-Channel Non Punch Through IGBT

Features

- Low-saturation voltage
- Ultrahigh speed switching
- Enhansment type

Specifications

Absolute Maximum Ratings at Ta=25°C, Unless otherwise specified

Parameter	Symbol	Conditions		Ratings	Unit
Collector-to-Emitter Voltage	V _{CES}			600	V
Gate-to-Emitter Voltage	V _{GES}			±30	V
Collector Current (DC)	I _C *1	Limited by Tjmax		36	A
	I _C *2	Limited by Tjmax	@Tc=25°C*3	23	A
			@Tc=100°C*3	12	A
Collector Current (Pulse)	I _{CP}	Pulse width Limited by Tjmax		144	A
Allowable Power Dissipation	P _D			3	W
		Tc=25°C (SANYO's ideal heat dissipation condition)*3		60	W
Junction Temperature	T _J			150	°C
Storage Temperature	T _{stg}			-55 to +150	°C

Note : *1 Shows chip capability

*2 Collector current is calculated from the following for mula

$$I_C(T_C) = \frac{T_{jmax} - T_C}{R_{th(j-c)} \times V_{CE(sat)max}(T_{jmax}, I_C(T_C))}$$

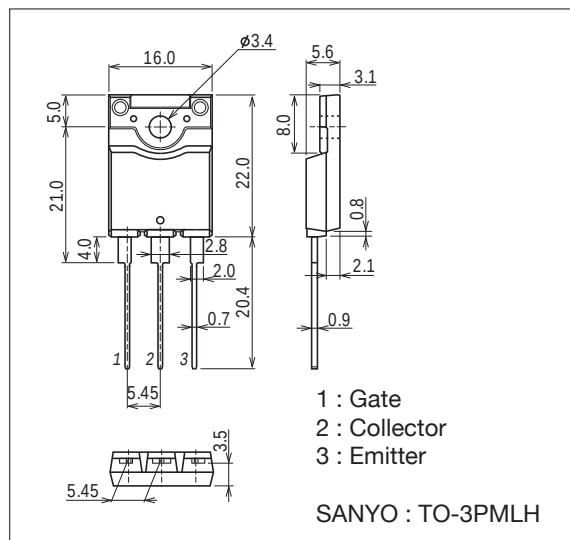
*3 SANYO's condition is radiation from backside.

The method is applying silicone grease to the backside of the device and attaching the device to water-cooled radiator made of aluminium.

Package Dimensions

unit : mm (typ)

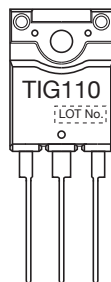
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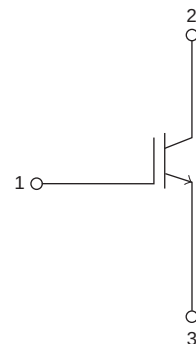
Product & Package Information

- Package : TO-3PMLH
- JEITA, JEDEC : SC-93, TO-247, SOT-199
- Minimum Packing Quantity : 100 pcs./tray

Marking



Electrical Connection



SANYO Semiconductor Co., Ltd.

<http://semicon.sanyo.com/en/network>

TIG110GMH

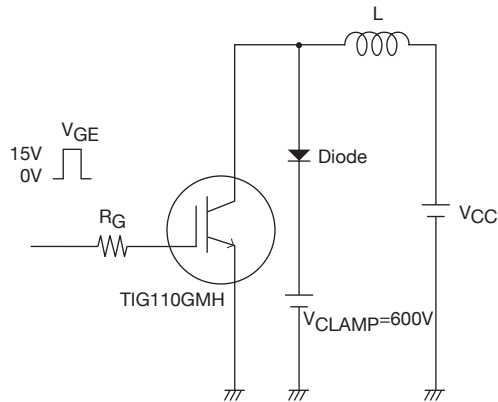
Electrical Characteristics at Tj=25°C, Unless otherwise specified

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Breakdown Voltage	V(BR)CES	IC=1mA, VGE=0V	600			V
Collector-to-Emitter Cutoff Current	ICES	VCE=600V, VGE=0V			100	μA
					1	mA
Gate-to-Emitter Leakage Current	IGES	VGE=±30V, VCE=0V			±100	nA
Gate-to-Emitter Threshold Voltage	VGE(off)	VCE=10V, IC=1mA	4.0	5.0	6.0	V
Collector-to-Emitter Saturation Voltage	VCE(sat)1	VGE=15V, IC=15A		1.6	2.0	V
	VCE(sat)2	Tj=25°C		1.75		V
		Tj=125°C		2.2		V
Input Capacitance	Cies	VCE=30V, f=1MHz		2880		pF
Output Capacitance	Coes			45		pF
Reverse Transfer Capacitance	Cres			38		pF
Turn-ON Delay Time	td(on)			65		ns
Rise Time	tr	L=200μH, VGE=15V, IC=15A, VCC=300V, Rg=30Ω, See specified Test Circuit.		30		ns
Turn-ON Time	ton			300		ns
Turn-OFF Delay Time	td(off)			250		ns
Fall Time	tf			120		ns
Turn-OFF Time	toff			450		ns
Total Gate Charge	Qg	VCE=300V, VGE=15V, IC=15A		95		nC
Gate-to-Source Charge	Qgs			20		nC
Gate-to-Drain "Miller" Charge	Qgd			30		nC

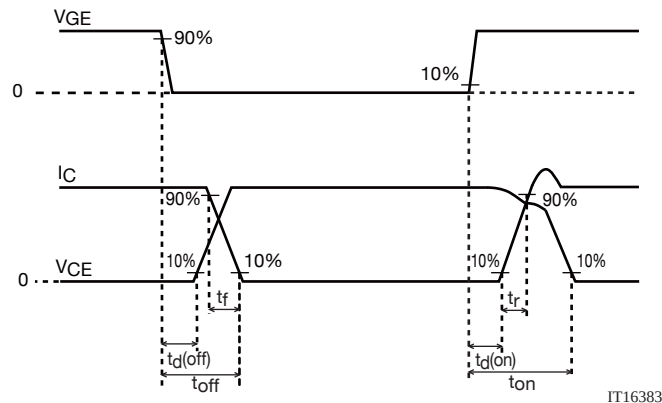
Thermal Characteristics at Ta=25°C, Unless otherwise specified

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Thermal Resistance (Junction- Case)	Rth(j-c)	Tc=25°C (SANYO's ideal heat dissipation condition)*3			2.08	°C / W
Thermal Resistance (Junction- at mosphere)	Rth(j-a)				41.7	°C / W

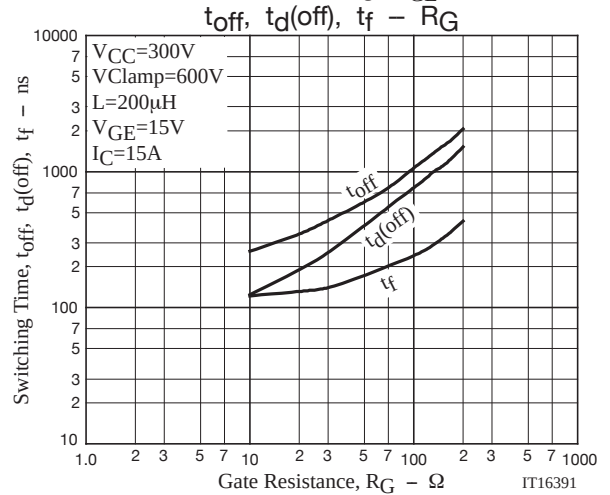
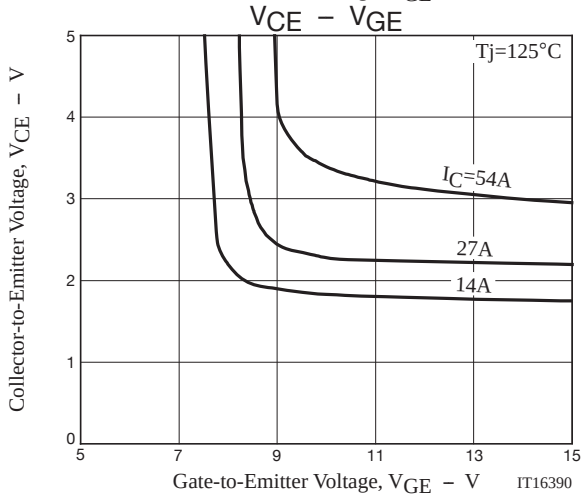
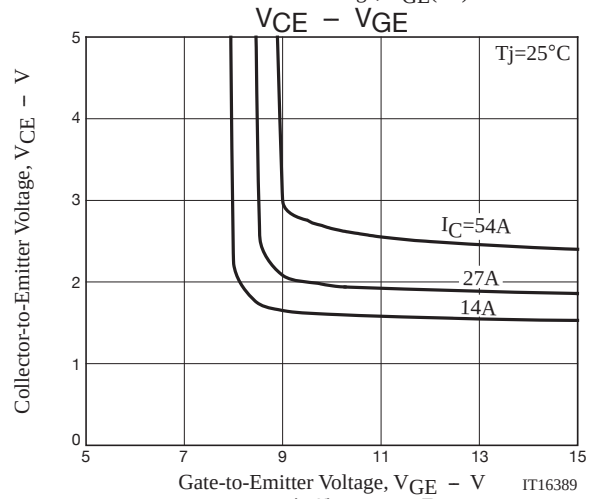
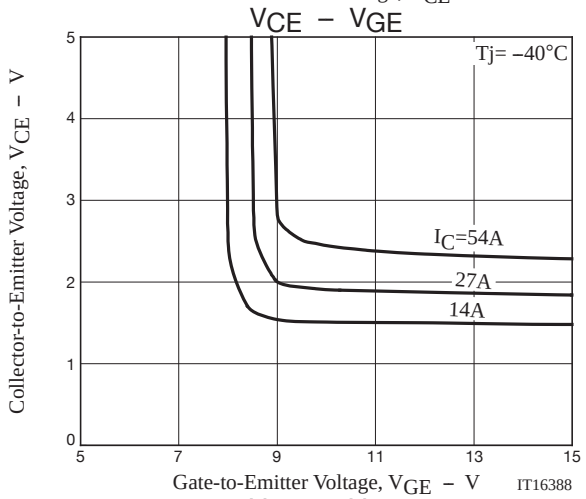
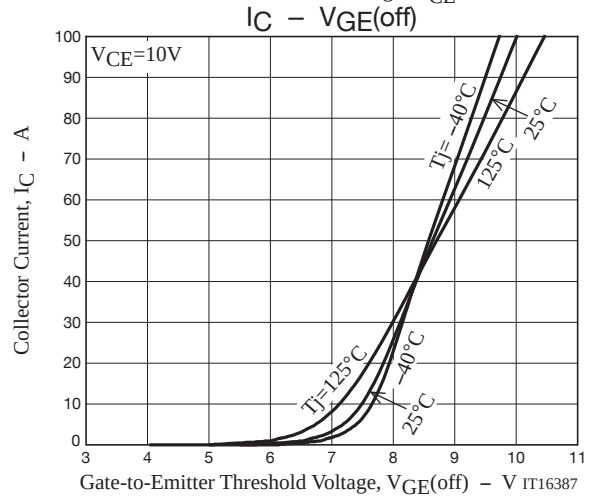
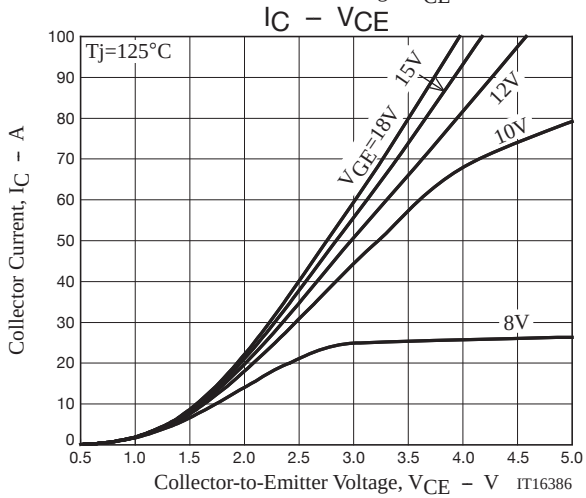
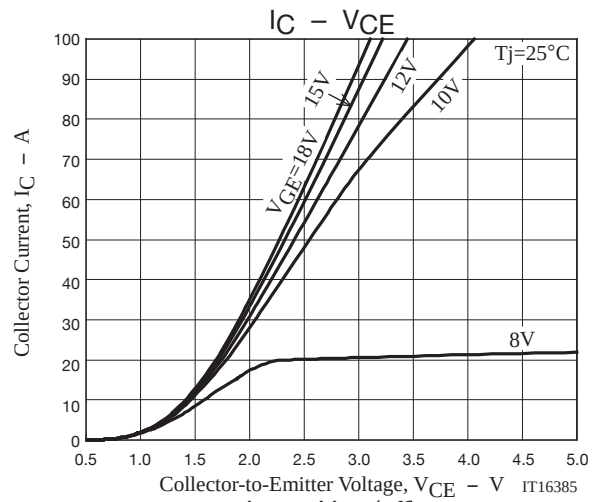
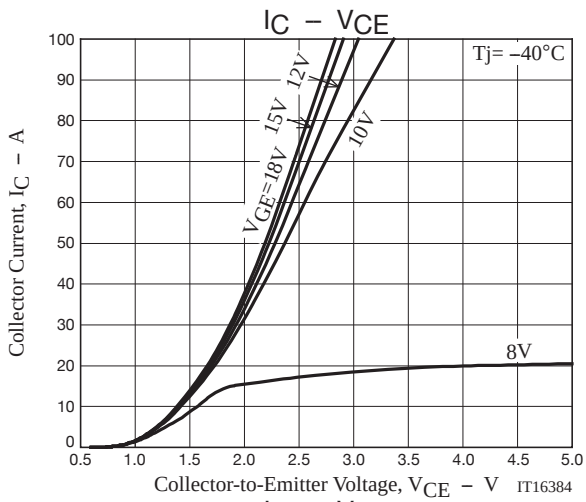
Switching Time Test Circuit



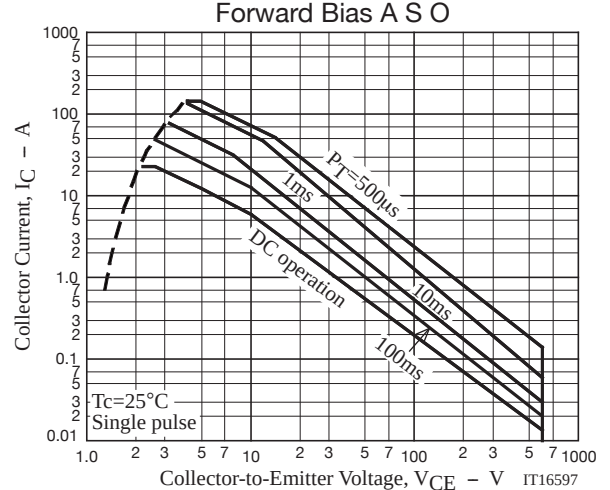
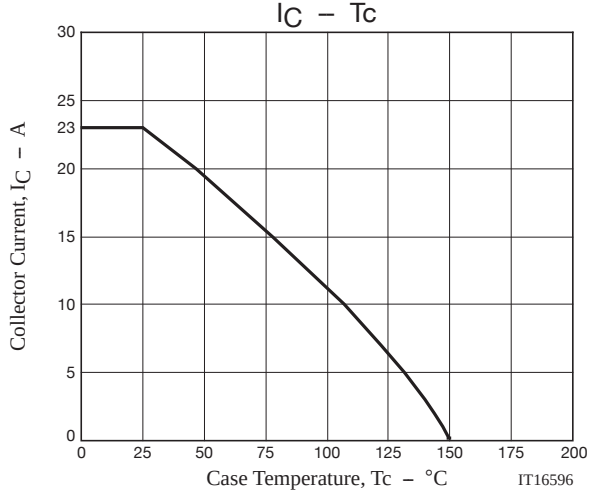
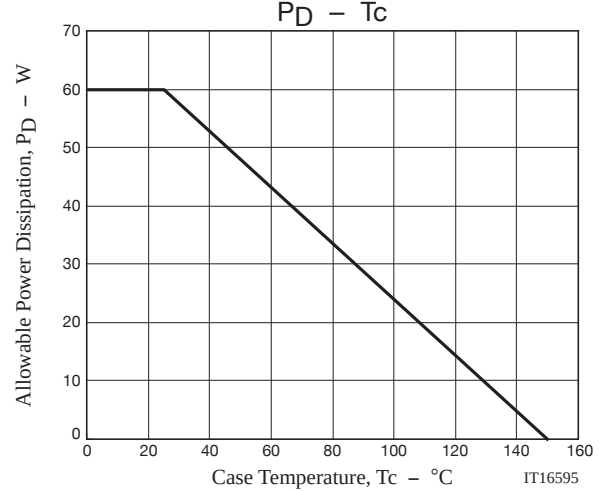
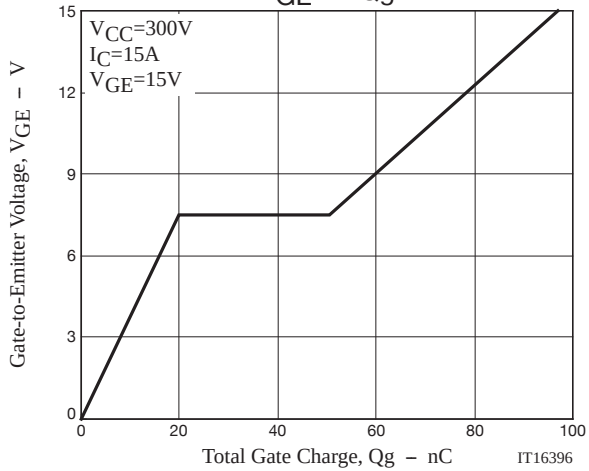
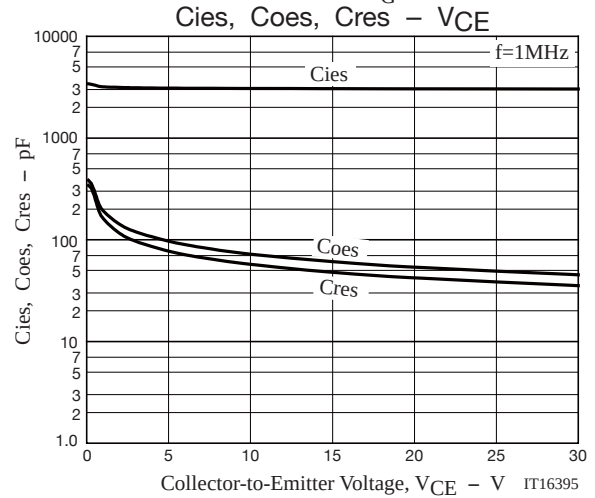
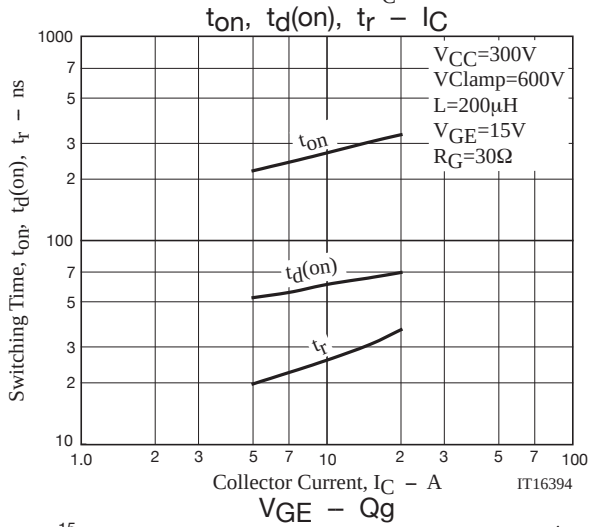
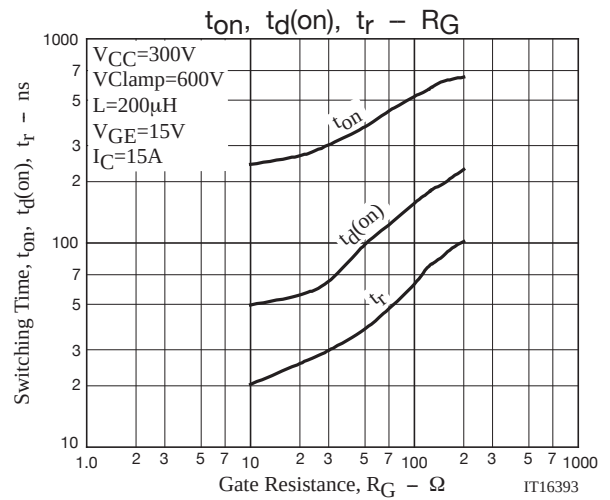
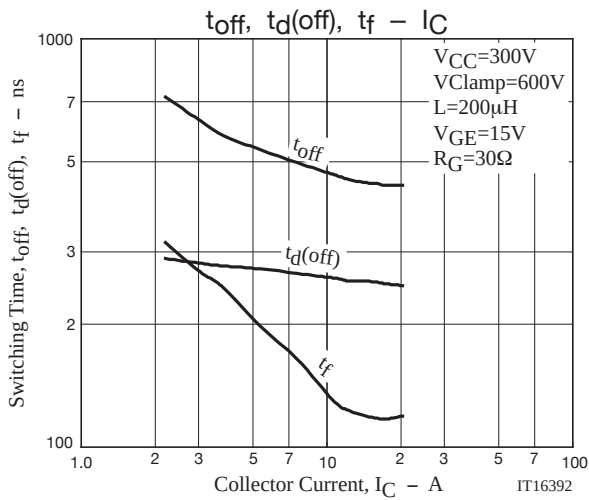
Timing Chart

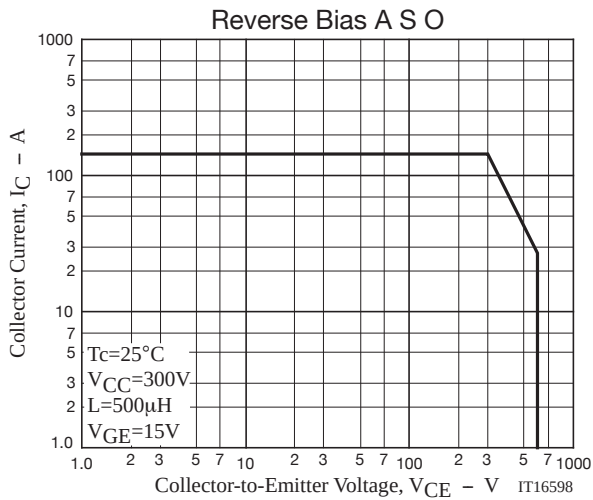


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