Ordering number : ENA1381A

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

TIG058E8 — N-Channel IGBT Light-Controlling Flash Applications

Features

- Low-saturation voltage
- Enhansment type
- Mounting Height 0.9mm, Mounting Area 8.12mm^2
- Halogen free compliance
- Low voltage drive (4V)
- Built-in Gate-to-Emitter protection diode
- dv / dt guarantee*

Specifications

Absolute Maximum Ratings at Ta=25°C

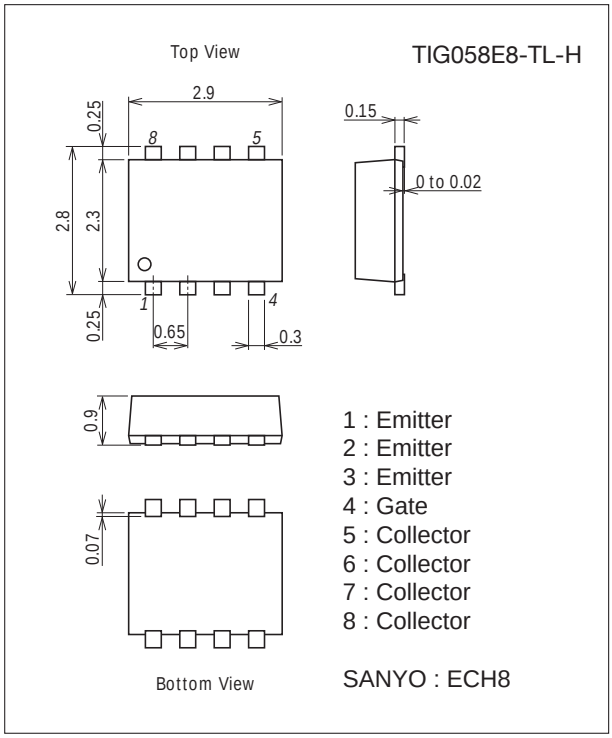
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Emitter Voltage	V_{CES}		400	V
Gate-to-Emitter Voltage (DC)	V_{GES}		±6	V
Gate-to-Emitter Voltage (Pulse)	V_{GES}	PW≤1ms	±8	V
Collector Current (Pulse)	I_{CP}	C_M=150μF, V_{GE}=4V	150	A
Maximum Collector-to-Emitter dv / dt	dV_{CE} / dt	V_{CE}≤320V, starting Tch=25°C	400	V / μs
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-40 to +150	°C

* : Concerning dv / dt (slope of Collector Voltage at the time of Turn-OFF), dv / dt > 400V / μs will be 100% screen-detected in the circuit shown as Fig. 1.

Package Dimensions

unit : mm (typ)

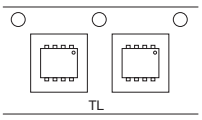
7011A-004



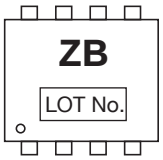
Product & Package Information

- Package : ECH8
- JEITA, JEDEC : -
- Minimum Packing Quantity : 3000 pcs./reel

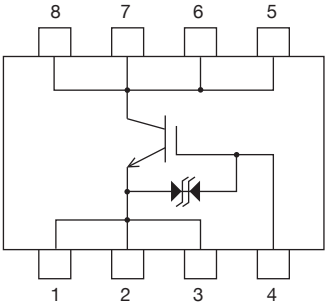
Packing Type: TL



Marking



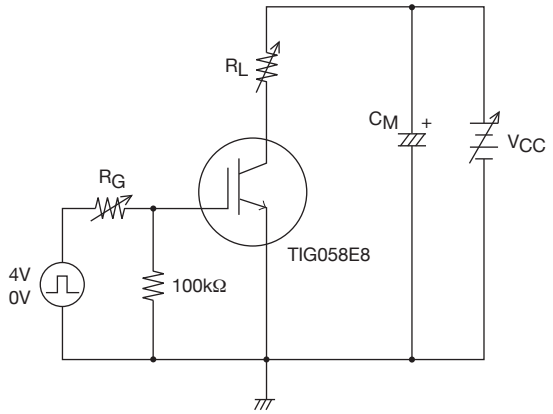
Electrical Connection



Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	I_C=2mA, V_{GE}=0V	400			V
Collector-to-Emitter Cutoff Current	I_{CES}	V_{CE}=320V, V_{GE}=0V			10	μA
Gate-to-Emitter Leakage Current	I_{GES}	V_{GE}=±6V, V_{CE}=0V			±10	μA
Gate-to-Emitter Threshold Voltage	$V_{GE(off)}$	V_{CE}=10V, I_C=1mA	0.4		0.9	V
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=100A, V_{GE}=4V		4.0	5.6	V
Input Capacitance	Cies	V_{CE}=10V, f=1MHz		2200		pF
Output Capacitance	Coes			32		pF
Reverse Transfer Capacitance	Cres			24		pF

Fig.1 Large Current R Load Switching Circuit

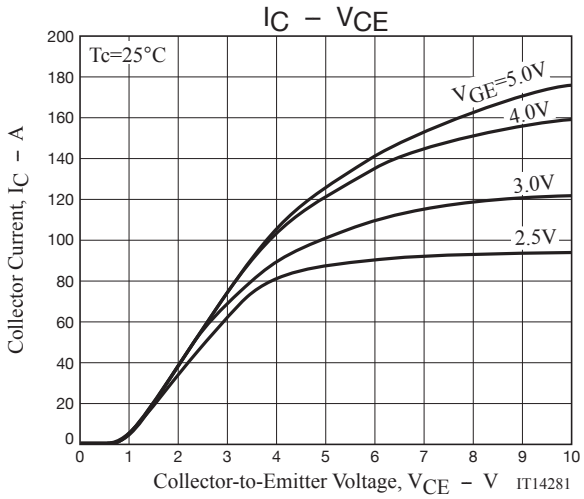


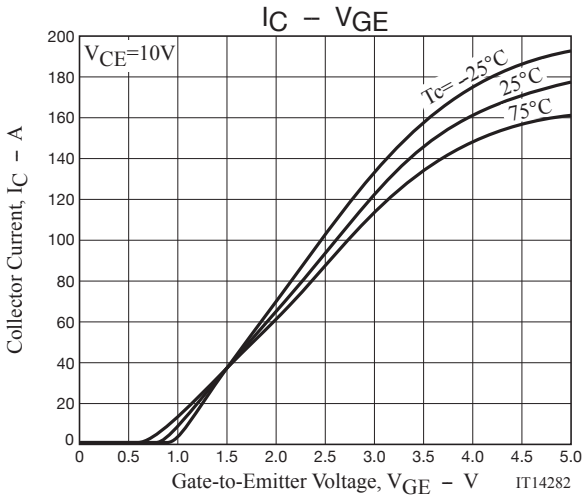
Note1. Gate Series Resistance $R_G \geq 230\Omega$ is recommended for protection purpose at the time of turn OFF. However, if dv / dt ≤ 400V / μs is satisfied at customer's actual set evaluation, $R_G < 230\Omega$ can also be used.

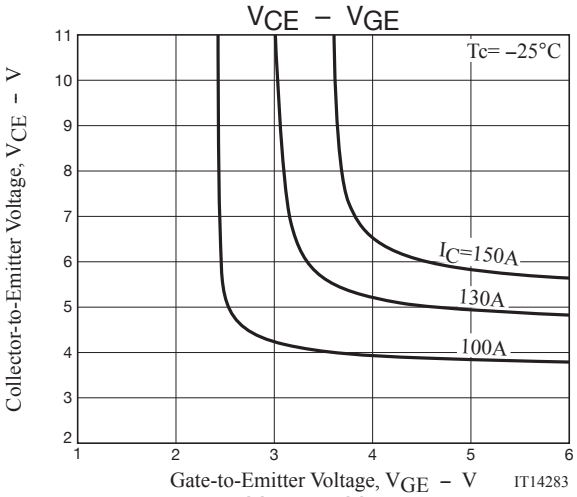
Note2. The collector voltage gradient dv / dt must be smaller than 400V / μs to protect the device when it is turned off.

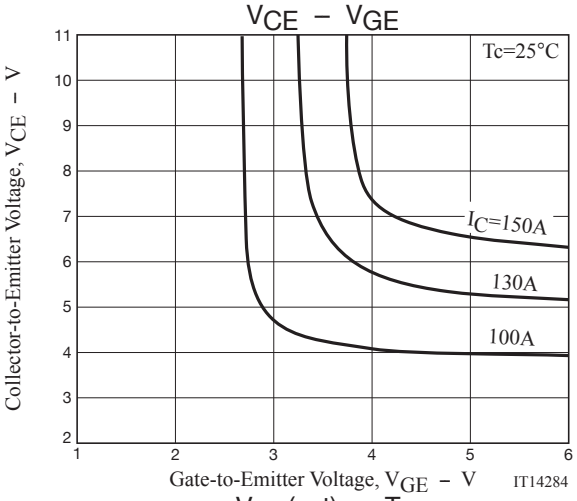
Ordering Information

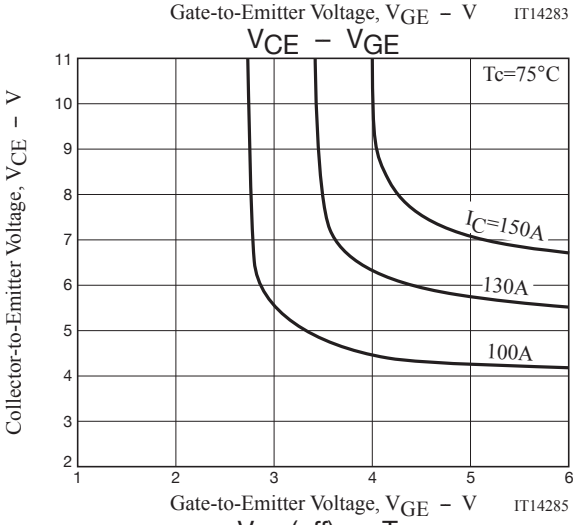
Device	Package	Shipping	memo
TIG058E8-TL-H	ECH8	3,000pcs./reel	Pb Free and Halogen Free

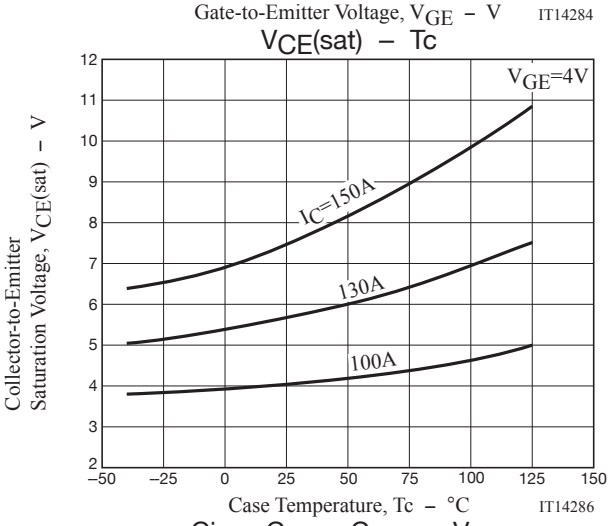


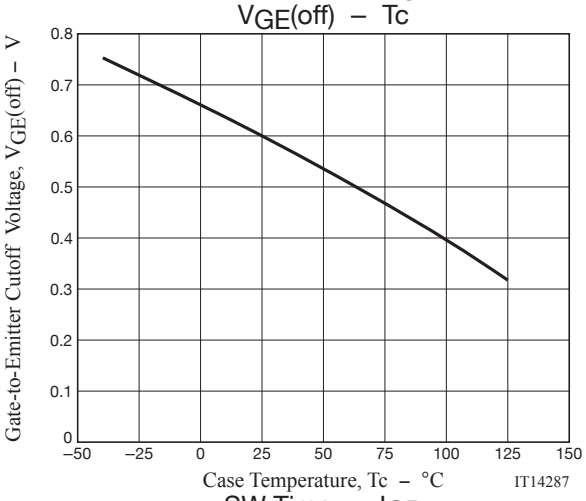


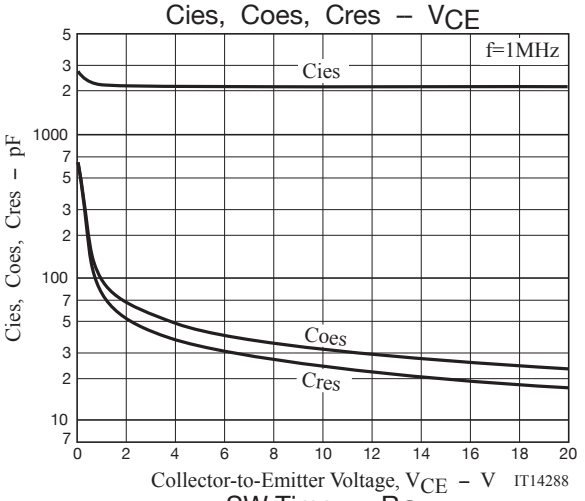

VCE – VGE
Tc= –25°C
IC=150A
130A
100A
Collector-to-Emitter Voltage, VCE – V
Gate-to-Emitter Voltage, VGE – V
IT14283

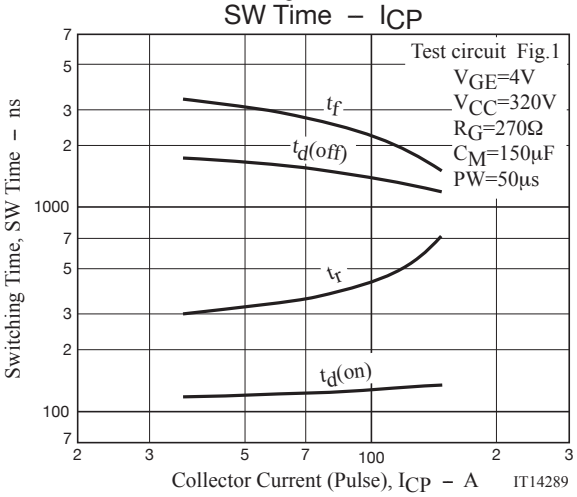

VCE – VGE
Tc=25°C
IC=150A
130A
100A
Collector-to-Emitter Voltage, VCE – V
Gate-to-Emitter Voltage, VGE – V
IT14284

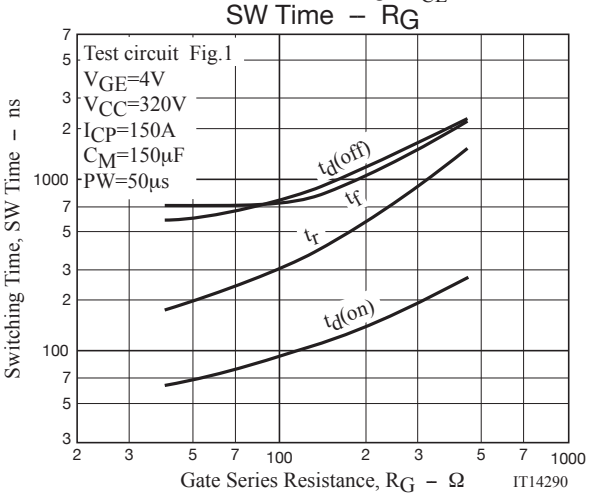

VCE – VGE
Tc=75°C
IC=150A
130A
100A
Collector-to-Emitter Voltage, VCE – V
Gate-to-Emitter Voltage, VGE – V
IT14285

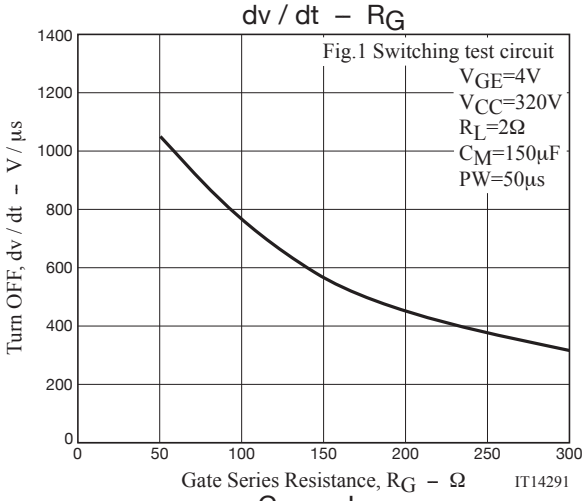

VCE(sat) – Tc
VGE=4V
IC=150A
130A
100A
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Case Temperature, Tc – °C
IT14286

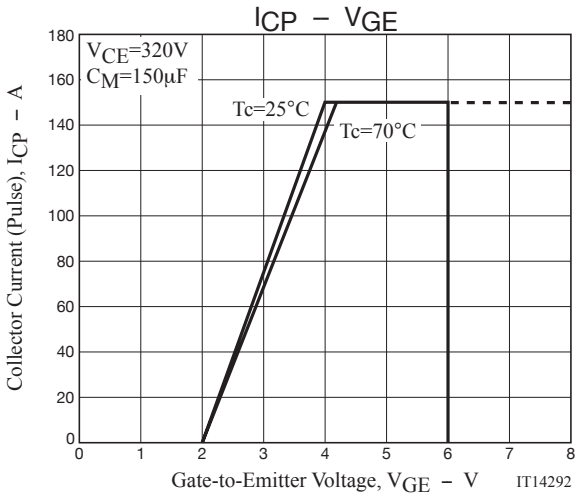

VGE(off) – Tc
Gate-to-Emitter Cutoff Voltage, VGE(off) – V
Case Temperature, Tc – °C
IT14287

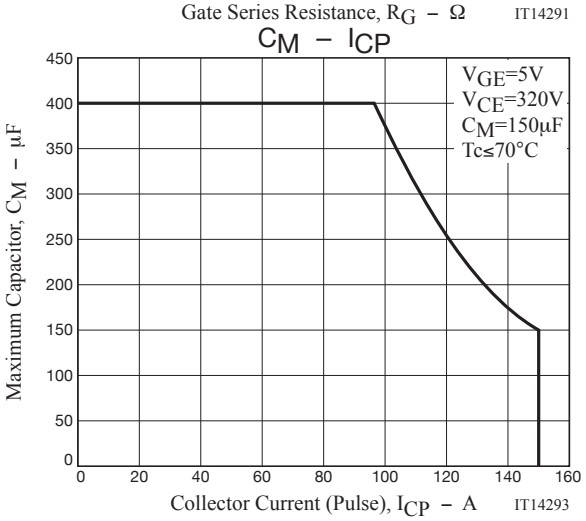

Cies, Coes, Cres – VCE
f=1MHz
Cies
Coes
Cres
Cies, Coes, Cres – pF
Collector-to-Emitter Voltage, VCE – V
IT14288


SW Time – ICP
Test circuit Fig.1
VGE=4V
VCC=320V
RG=270Ω
CM=150µF
PW=50µs
tf
td(off)
tr
td(on)
Switching Time, SW Time – ns
Collector Current (Pulse), ICP – A
IT14289


SW Time – RG
Test circuit Fig.1
VGE=4V
VCC=320V
ICP=150A
CM=150µF
PW=50µs
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Gate Series Resistance, RG – Ω
IT14290


dv / dt – RG
Fig.1 Switching test circuit
VGE=4V
VCC=320V
RL=2Ω
CM=150μF
PW=50μs
Turn OFF, dv / dt – V / μs
Gate Series Resistance, RG – Ω
IT14291


ICP – VGE
VCE=320V
CM=150μF
Tc=25°C
Tc=70°C
Collector Current (Pulse), ICP – A
Gate-to-Emitter Voltage, VGE – V
IT14292


CM – ICP
VGE=5V
VCE=320V
CM=150μF
Tc≤70°C
Maximum Capacitor, CM – μF
Collector Current (Pulse), ICP – A
IT14293

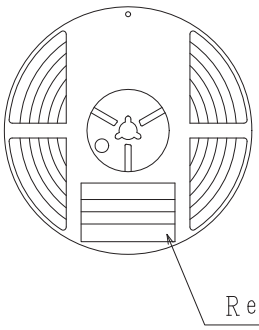
Embossed Taping Specification

TIG058E8-TL-H

1. Packing Format

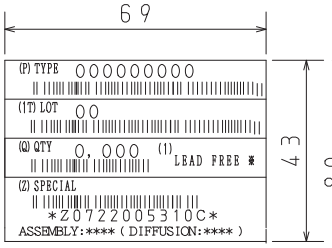
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
ECH8	CPH6	3,000	15,000	90,000	5 reels contained Dimensions:mm(external) 183×72×185	6 inner boxes contained Dimensions:mm(external) 440×195×210

Packing method



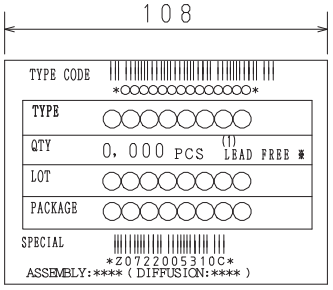
Reel label, Inner box label

(unit:mm)



Outer box label

It is a label at the time of factory shipments. The form of a label may change in physical distribution process.



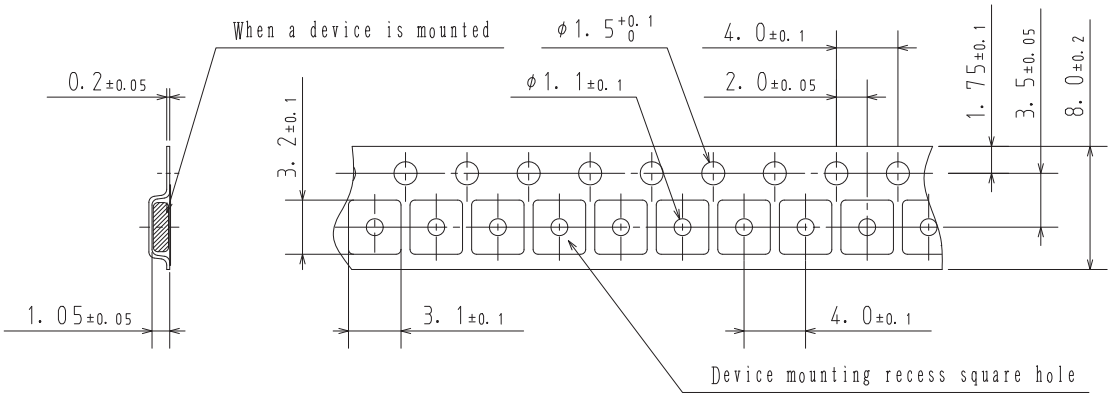
NOTE (1)

The LEAD FREE ※ description shows that the surface treatment of the terminal is lead free.

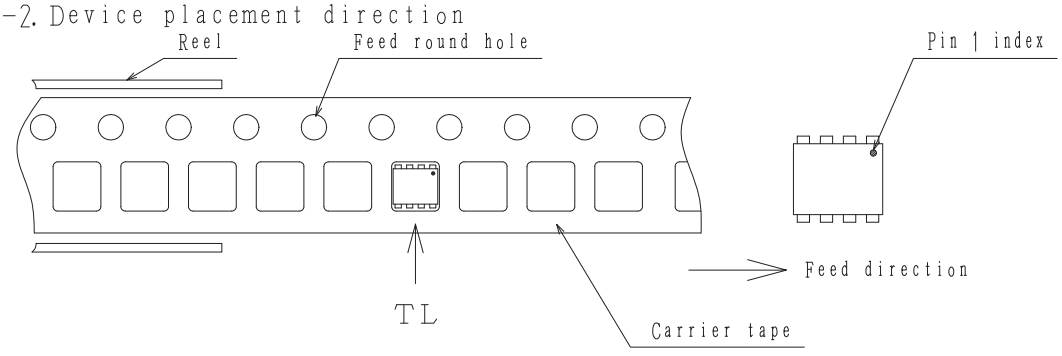
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

2-1. Carrier tape size (unit:mm)



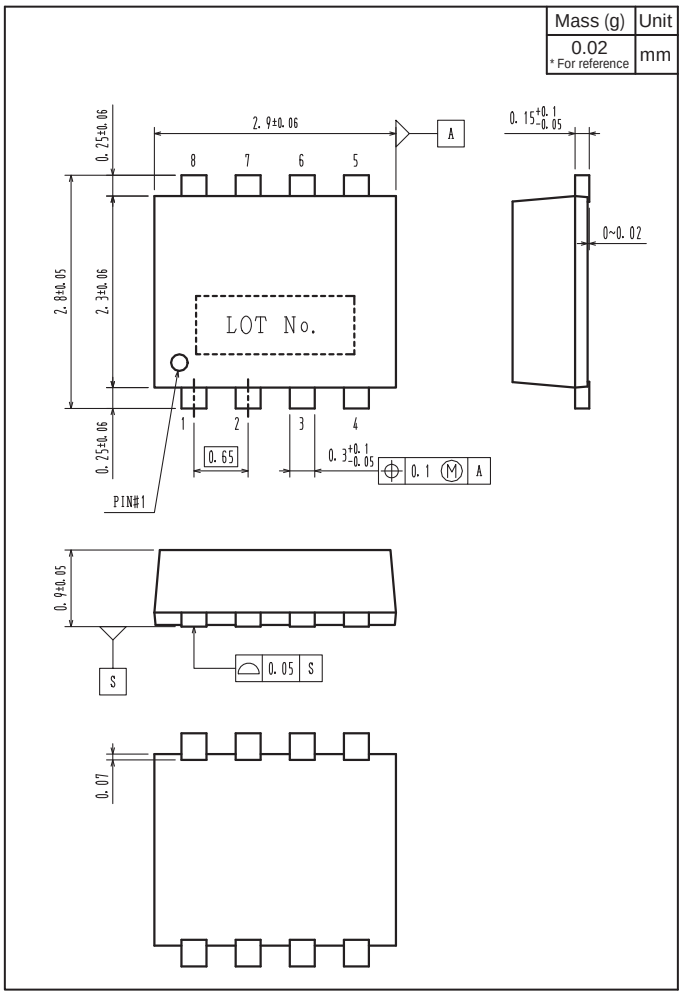
2-2. Device placement direction



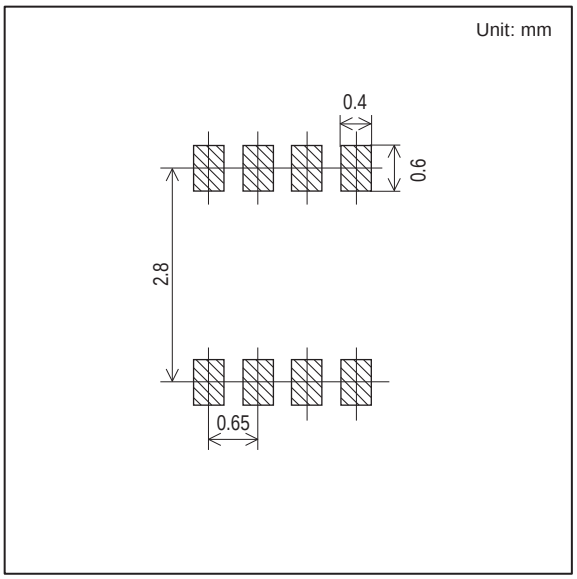
Those with pin 1 index on the feed hole side·····TL

Outline Drawing

TIG05E8-TL-H



Land Pattern Example



Note : TIG058E8 has protection diode between gate and emitter but handling it requires sufficient care to be taken.

This catalog provides information as of June, 2012. Specifications and information herein are subject to change without notice.