

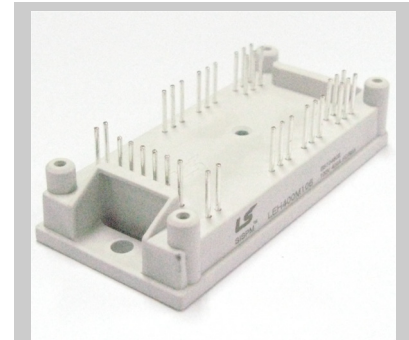
**Features**

- Non punch through (NPT) technology
- Ultra-fast
- 10µs Short circuit current
- Positive VCE(on) temperature coefficient
- Free wheeling diodes with fast and soft reverse recovery

**Applications**

- Power supply
- UPS / Inverter
- Motor driver

**Target data**



**SISPM1**

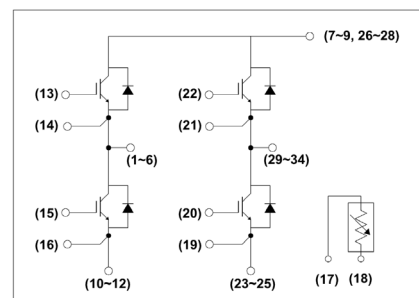
82.0 x 37.4 x 21.2mm

**Absolute Maximum Ratings** T<sub>C</sub> = 25°C unless otherwise noted

Item	Symbol	Conditions	Value	Units
IGBT	V <sub>CES</sub>		600	V
	V <sub>GES</sub>		± 20	V
	I <sub>C</sub>	@T <sub>J</sub> = 150 °C, T <sub>C</sub> = 25 °C, Continuous	100	A
		@T <sub>J</sub> = 150 °C, T <sub>C</sub> = 45 °C, Continuous	-	A
	I <sub>CM</sub>	@T <sub>C</sub> = 45 °C, t <sub>p</sub> = 1 ms	-	A
	T <sub>SC</sub>	Chip Level, @T <sub>J</sub> = 150 °C, V <sub>GE</sub> = 15 V, V <sub>CES</sub> < 600 V	10	µs
	T <sub>J</sub>	Operating Junction Temperature <sup>(1)</sup>	-40~125	°C
	P <sub>D</sub>	@T <sub>J</sub> = 150 °C, T <sub>C</sub> = 25 °C	-	W
@T <sub>J</sub> = 150 °C, T <sub>C</sub> = 80 °C		-	W	
Diode	V <sub>RRM</sub>		600	V
	I <sub>F</sub>	@T <sub>C</sub> = 25 °C	75	A
		@T <sub>C</sub> = 80 °C	-	A
	I <sub>FRM</sub>	@T <sub>C</sub> = 80 °C, t <sub>p</sub> = 1 ms	-	A
	T <sub>J</sub>	Operating Junction Temperature <sup>(1)</sup>	-40~125	°C
	P <sub>D</sub>	@T <sub>C</sub> = 25 °C	-	W
@T <sub>C</sub> = 80 °C		-	W	
Module	T <sub>stg</sub>	Storage Temperature	-40~125	°C
	V <sub>iso</sub>	@AC 1minute	2500	V
	M <sub>t</sub>	Main Terminal Mounting torque (M4)	2.0~2.2	Nm
	W	Weight	50	g

**Internal Circuit & Pin Description**

Pin Number	Pin Name	Pin Description
1~6, 29~34	U, V	U, V Output
7~9, 26~28	P	PositiveDC Link Output
10~12, 23~25	N	Negative DC Link Output
13,22	GUH, GVH	Gate Input for High-side
14,21	EUH, EVH	Emitter Input for High-side
15,20	GUL, GVL	Gate Input for Low-side
16,19	EUL, EVL	Emitter Input for Low-side
17,18		NTC



(Note \*1) The Maximum junction temperature of chip is 150°C.

**Electrical Characteristics of IGBT**  $T_C = 25^\circ\text{C}$  unless otherwise noted

**Static Characteristics**

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
$BV_{CES}$	C-E Breakdown Voltage	$V_{GE} = 0\text{ V}, I_C = 250\ \mu\text{A}$	600	-	-	V
$I_{CES}$	C-E Cut-Off Current	$V_{CE} = V_{CES}, V_{GE} = 0\text{ V}$	-	-	250	$\mu\text{A}$
$I_{GES}$	G-E Leakage Current	$V_{GE} = V_{GES}, V_{CE} = 0\text{ V}$	-	-	-	nA
$V_{GE(th)}$	G-E Threshold Voltage	$V_{GE} = V_{CE}, I_C = 100\text{ mA}$	-	5.0	-	V
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage	$I_C = 100\text{ A}, V_{GE} = 15\text{ V}, T_C = 25^\circ\text{C}$	-	2.7	-	V
		$I_C = 100\text{ A}, V_{GE} = 15\text{ V}, T_C = 125^\circ\text{C}$	-	3.0	-	V

**Dynamic Characteristics**

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
$C_{ies}$	Input Capacitance	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}$ $f = 1\text{ MHz}, T_C = 25^\circ\text{C}$	-	-	-	nF
$C_{oes}$	Output Capacitance		-	-	-	nF
$C_{res}$	Reverse Transfer Capacitance		-	-	-	nF
$t_d(on)$	Turn-On Delay Time	$T_C = 125^\circ\text{C}, R_G = 68\ \Omega$ $L = 100\ \mu\text{H}, V_{DC} = 300\text{ V}$ $V_{GE} = 15\text{ V} \sim -15\text{ V}$ $I_C = 100\text{ A}$	-	-	-	ns
$t_r$	Rise Time		-	-	-	ns
$t_d(off)$	Turn-Off Delay Time		-	-	-	ns
$t_f$	Fall Time		-	-	-	ns
$E_{on}$	Turn-On Switching Loss		-	-	-	mJ
$E_{off}$	Turn-Off Switching Loss		-	-	-	mJ
$E_{is}$	Total Switching Loss		-	-	-	mJ
$Q_g$	Total Gate Charge	$V_{GE} = 0\text{ V} \sim +15\text{ V}$	-	-	-	nC
$Q_{ge}$	Gate-Emitter Charge		-	-	-	nC
$Q_{gc}$	Gate-Collector Charge		-	-	-	nC

**Electrical Characteristics of Diode**  $T_C = 25^\circ\text{C}$  unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units	
$V_F$	Diode Forward Voltage	$I_F = 100\text{ A}$ $V_{GE} = 0\text{ V}$	$T_C = 25^\circ\text{C}$	-	1.6	-	V
			$T_C = 125^\circ\text{C}$	-	1.6	-	
$t_{rr}$	Diode Reverse Recovery Time	$R_G = 68\ \Omega$ $L = 100\ \mu\text{H}$ $V_{DC} = 300\text{ V}$ $V_{GE} = 15\text{ V} \sim -15\text{ V}$ $I_C = 100\text{ A}$	$T_C = 25^\circ\text{C}$	-	-	-	ns
			$T_C = 125^\circ\text{C}$	-	-	-	
$I_{RRM}$	Diode Peak Reverse Recovery Current		$T_C = 25^\circ\text{C}$	-	-	-	A
			$T_C = 125^\circ\text{C}$	-	-	-	
$Q_{rr}$	Diode Reverse Recovery Charge		$T_C = 25^\circ\text{C}$	-	-	-	$\mu\text{C}$
			$T_C = 125^\circ\text{C}$	-	-	-	
$E_{rr}$	Diode Reverse Recovery Energy	$T_C = 25^\circ\text{C}$	-	-	-	mJ	
		$T_C = 125^\circ\text{C}$	-	-	-		

**Thermal Characteristics**

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
$R_{th(J-C)}$	Thermal Resistance (MOSFET Part)	Junction-to-Case	-	0.35	-	$^\circ\text{C/W}$

**NTC thermistar Characteristics**

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
$R_{25}$	Resistance	$T_C = 25^\circ\text{C}$		22		k $\Omega$
P	Power	$T_C = 25^\circ\text{C}$		210		mW
$B_{25/100}$	B constant	$T_C = 25^\circ\text{C}, \pm 3\%$ tolerance	-	4000	-	K

\* This specifications may not be considered as an assurance of characteristics and may not have same characteristics in case of using different test systems from @LSIS. We therefore strongly recommend prior consultation of our engineers.

# LEF100G602

## Package Dimension(Dimension in mm)

