

Hitachi 4th Generation !!

Feature of GR Series IGBT

	600V class	1200V class
1 Low Loss	1) turn-OFF switching loss ; <i>approx. -20% compare to GS series</i> 2) FWD's VF : <i>typ1.6V</i> <i>(-0.5V compare to GS series)</i>	1) turn-OFF switching loss ; <i>approx. -25% compare to GS series</i> 2) IGBT's VCE(sat) : <i>typ2.2V</i> <i>(-0.5V compare to GS series)</i>
2 Improved Thermal Impedance	IGBT ; <i>approx. -15% compare to GS series</i>	FWD ; <i>apprx. -10% compare to GS series</i>
3 High Reliability	Thermal fatigue durability ; <i>2 times increase compare to GS series</i>	

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GR Series

600V class

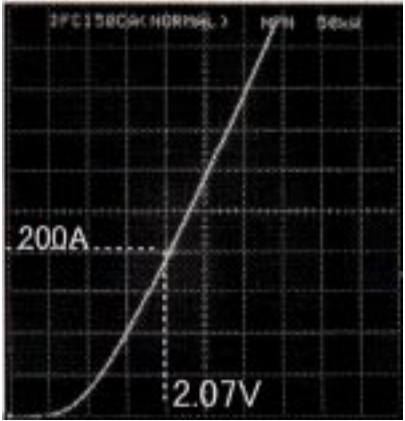
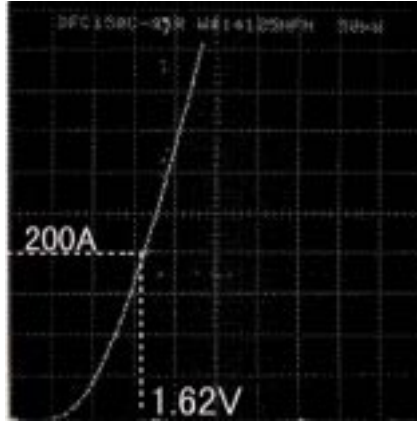
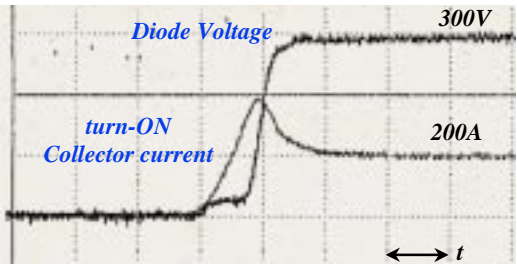
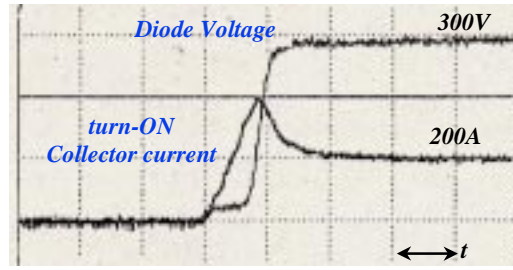
Here, The Future

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Diode Characteristics for GR Series (@Tc=125°C)

<<< 600V/200A IGBT Module >>>

SW \ type	GS Series (Hitachi 3 rd Gen.)	GR Series (Hitachi 4 th Gen.)
VF curves	 <p>IC(50A/div) ↑</p> <p>→ VF(0.5V/div)</p>	 <p>IC(50A/div) ↑</p> <p>→ VF(0.5V/div)</p>
Recovery characteristics	<div style="border: 1px solid blue; border-radius: 10px; padding: 5px; display: inline-block;">Competitive</div>	
	 <p>Diode Voltage 300V</p> <p>turn-ON Collector current 200A</p> <p>0</p> <p>↔ t (200ns/div.)</p>	 <p>Diode Voltage 300V</p> <p>turn-ON Collector current 200A</p> <p>0</p> <p>↔ t (200ns/div.)</p>

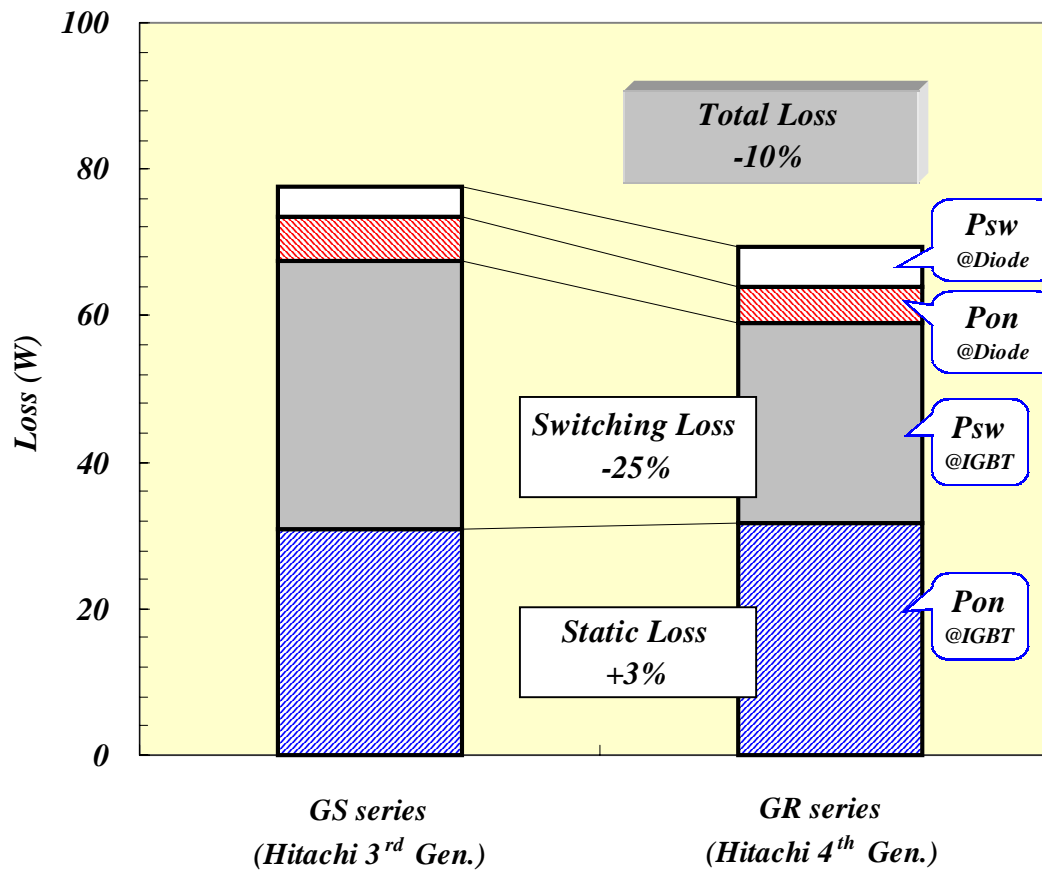
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Loss Simulation with Inverter(DC to AC) Mounted

<<< 600V/200A IGBT Module >>>

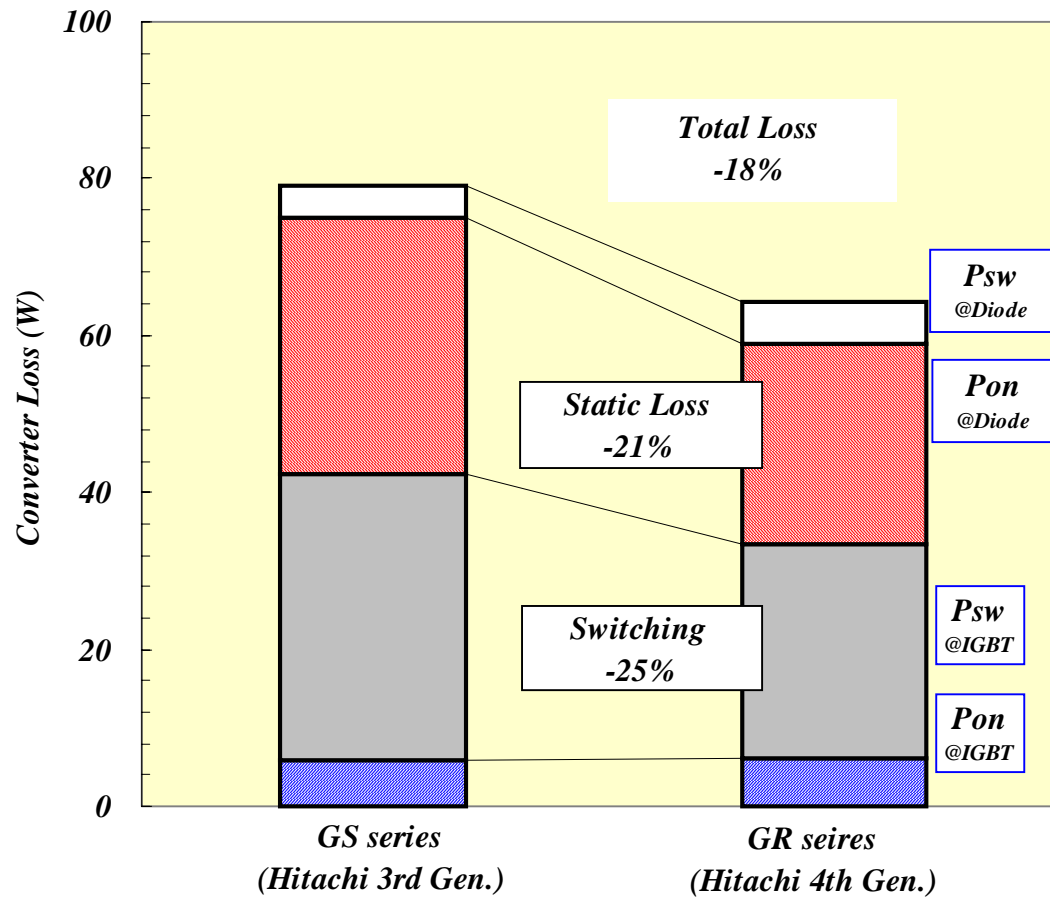


{ Conditions }
 $V_{CC} = 300\text{ V}$
 $I_o = 60\text{ Arms}$
 Power factor = 0.85
 $f_c = 10\text{ kHz}$

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Loss Simulation with Converter (AC to DC) Mounted

<<< 600V/200A IGBT Module >>>



{ Conditions }
 $V_{cc} = 300\text{ V}$
 $I_o = 60\text{ Arms}$
 Power factor = -0.85
 $f_c = 10\text{ kHz}$

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GR Series

1200V class

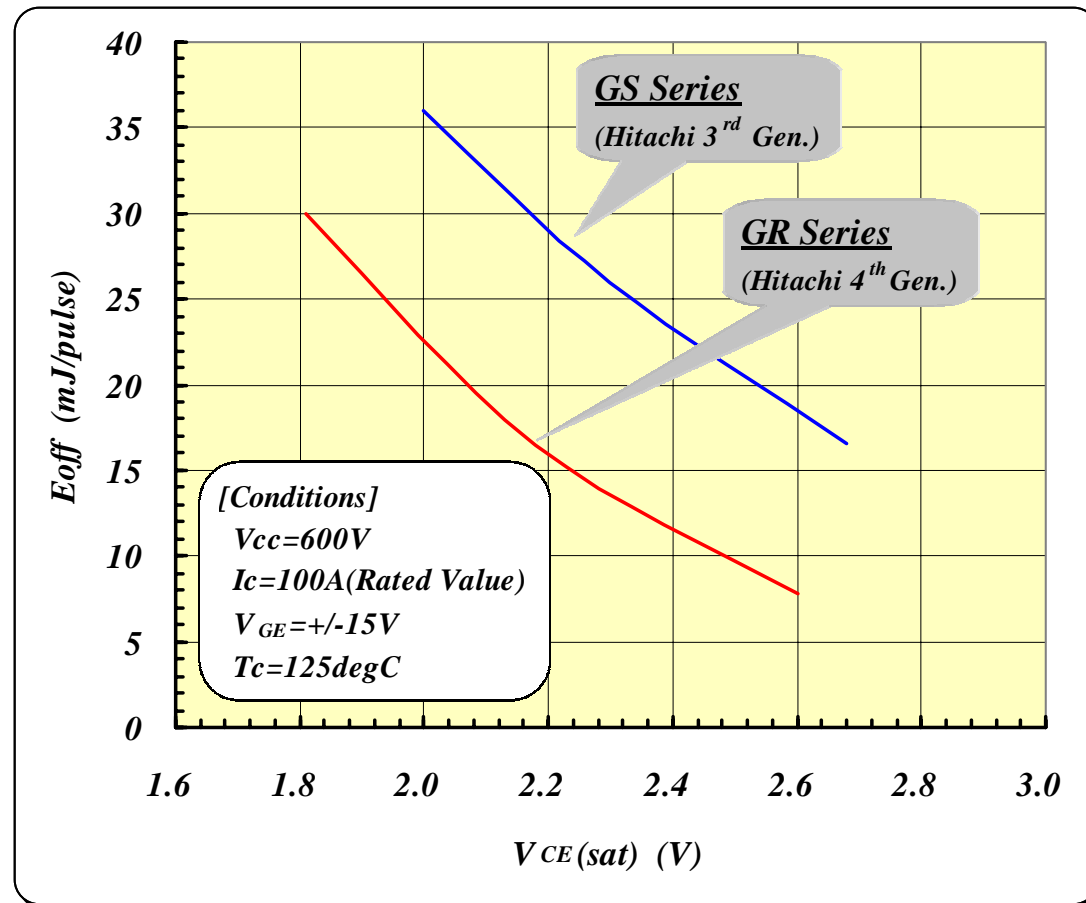
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Trade-Off Curves for GR Series IGBT

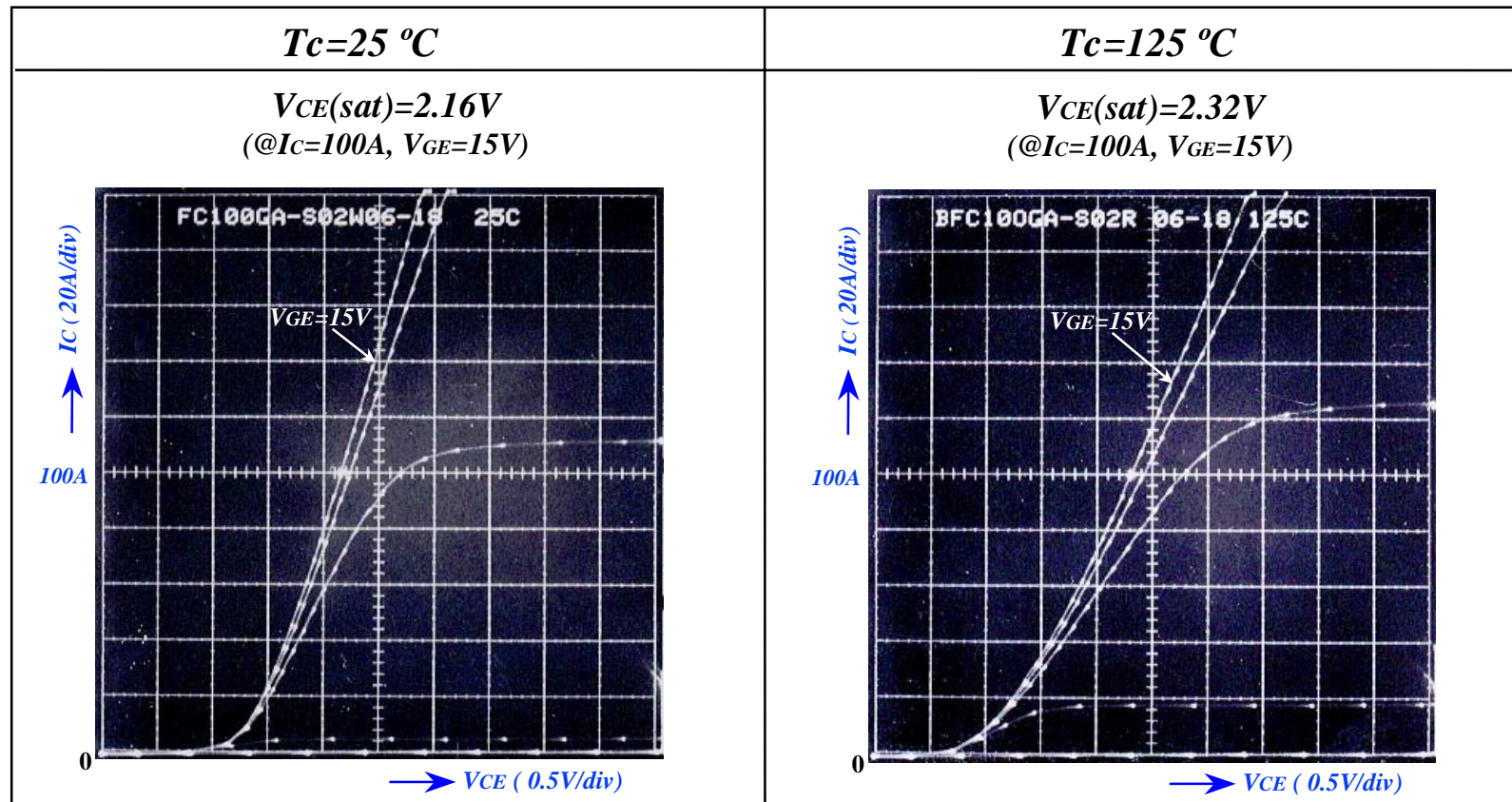
<<< 1200V class >>>



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Output Characteristics for GR Series IGBT

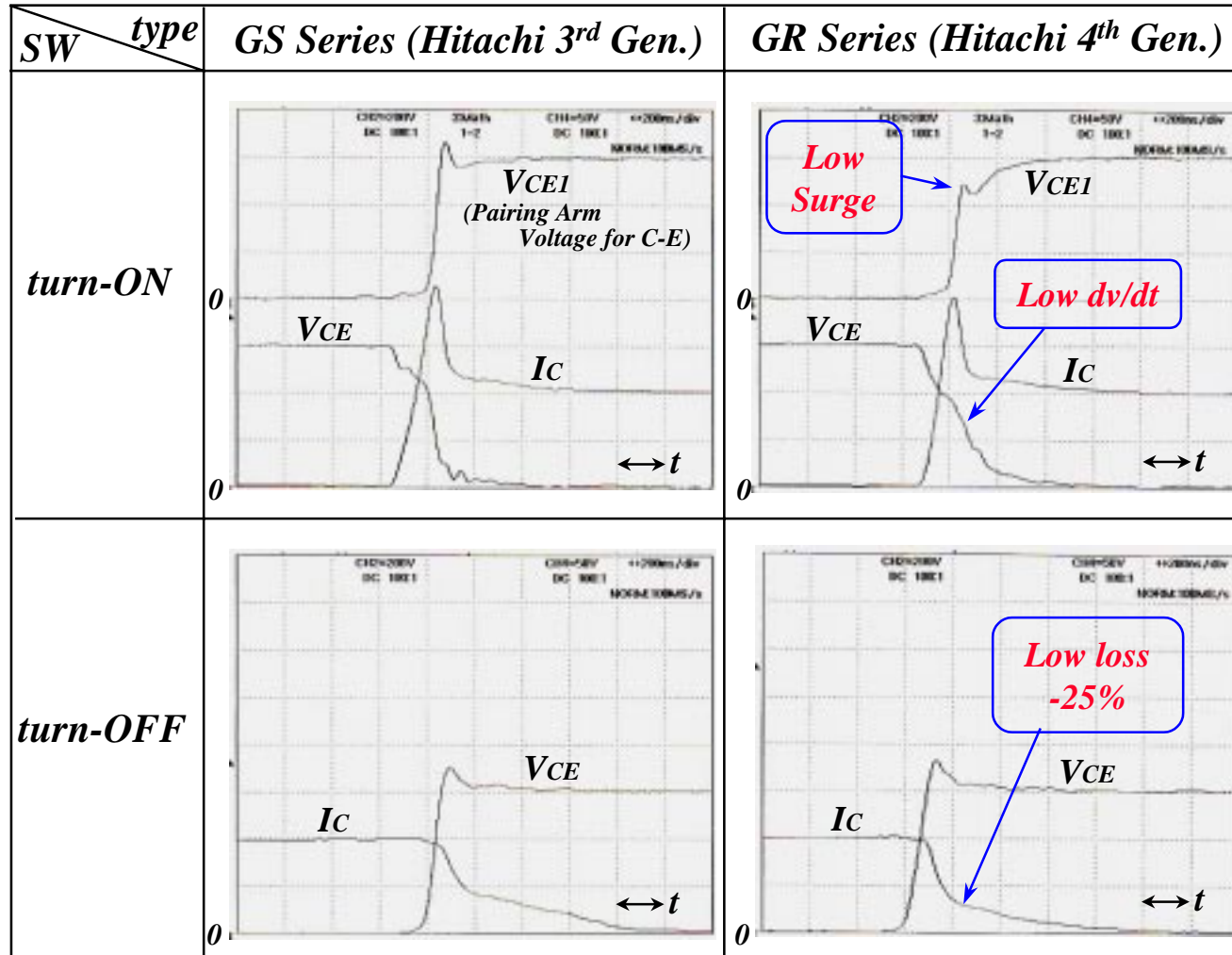
<<< 1200V / 100A IGBT Module >>>



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Switching Waveform for GR Series IGBT (@T_c=125°C)

<<< 1200V/100A IGBT Module >>>



{Conditions}

V_{CC}=600V

I_C=100A

V_{GE}=±15V

T_c=125°C

Inductive Load

{Range}

V_{CE} ;200V/div.

I_C ;50A/div.

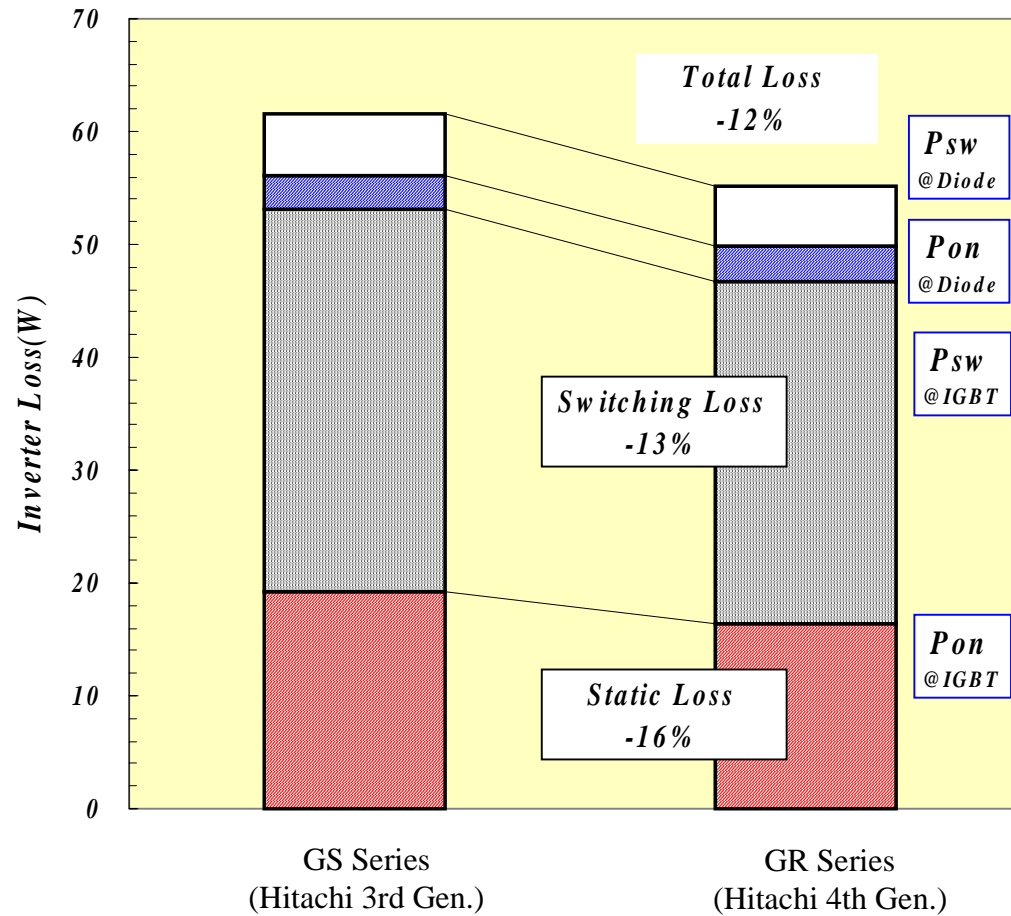
V_{GE} ;20V/div.

t ;200ns/div.

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Loss Simulation with Inverter(DC to AC) Mounted

<<< 1200V/100A IGBT Module >>>



{Conditions}
 $V_{CC}=600V$
 $I_o=30Arms$
 Power factor=0.85
 $f_c=10kHz$