Device Modeling Report

COMPONENTS: Insulated Gate Bipolar Transistor (IGBT)
PART NUMBER: 1MBC05D-060
MANUFACTURER: Fuji Electric
*REMARK: Free-Wheeling Diode Professional Model

Bee Technologies Inc.

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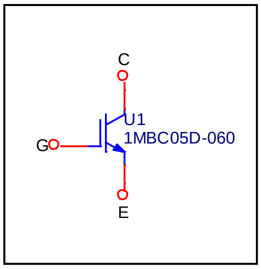
Circuit Configuration



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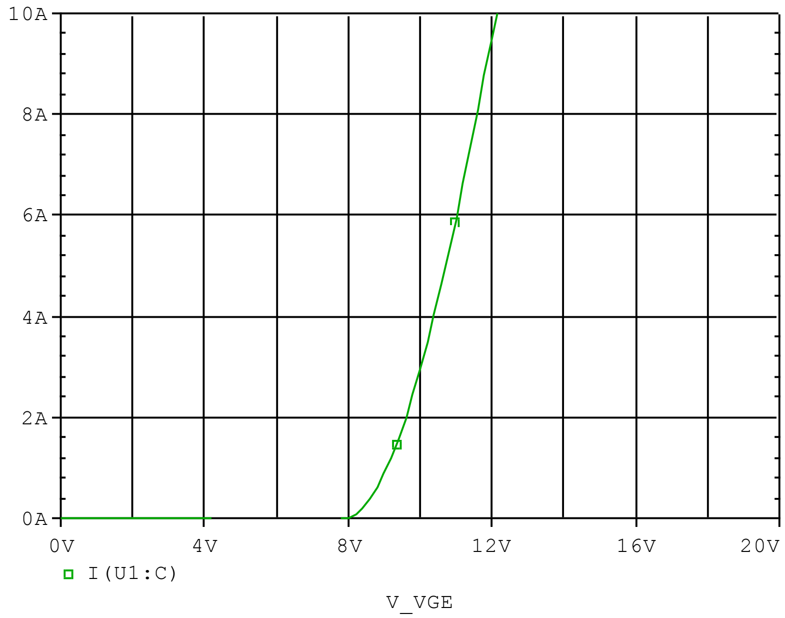
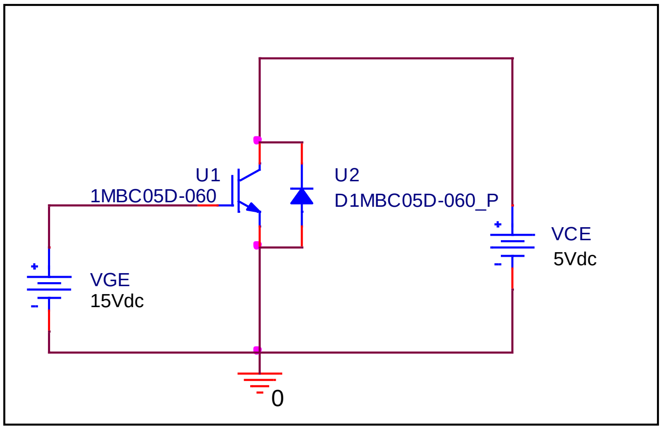
Transfer Characteristics

Circuit Simulation result

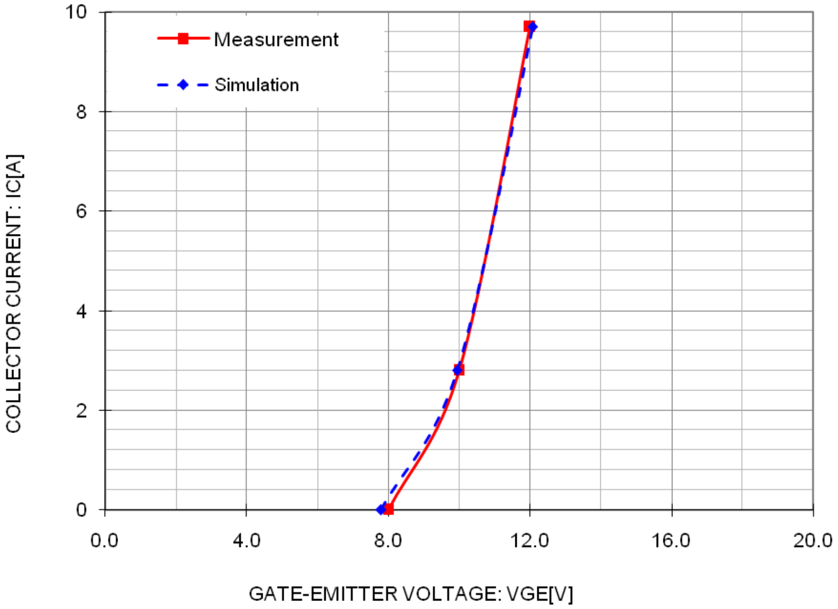


Evaluation circuit



Comparison Graph

Simulation result



Comparison table

Test condition: V_{CE} =5 (V)

IC (A)	VGE (V)		%Error
	Measurement	Simulation	
0.000	8.000	7.800	-2.50
2.800	10.000	9.944	-0.56
9.700	12.000	12.067	0.56

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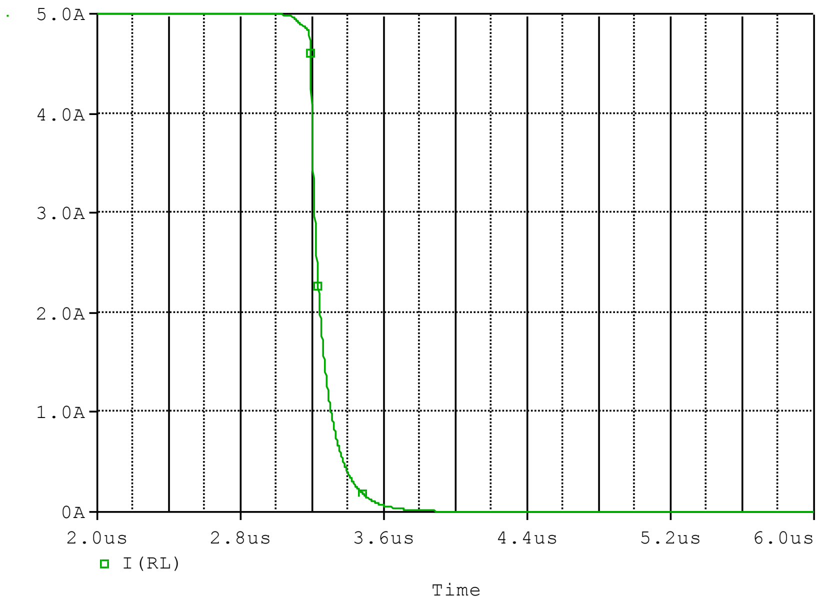
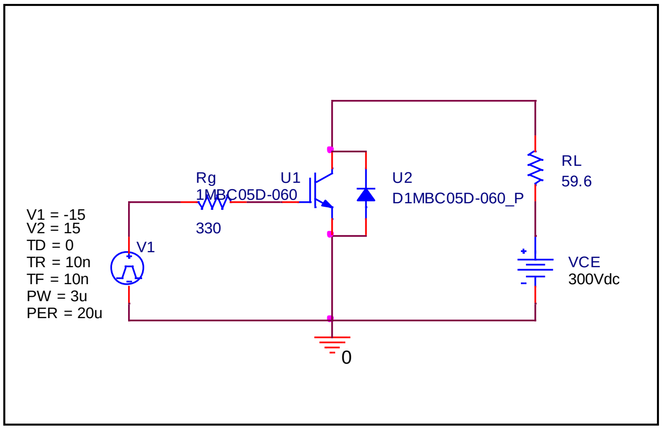
Fall Time Characteristics

Circuit Simulation result



Evaluation circuit



Test condition: IC=5 (A), VCC=300 (V)

Parameter	Unit	Measurement	Simulation	%Error
tf	us	0.180	0.183	1.395

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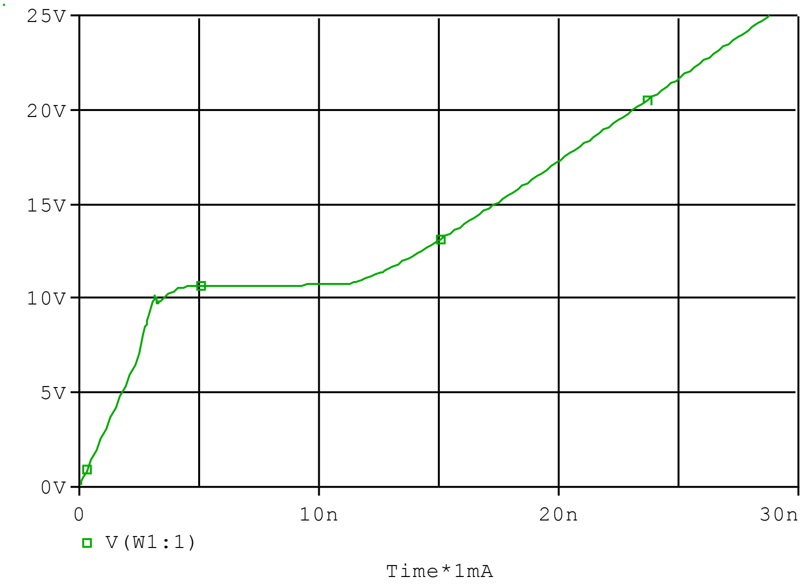
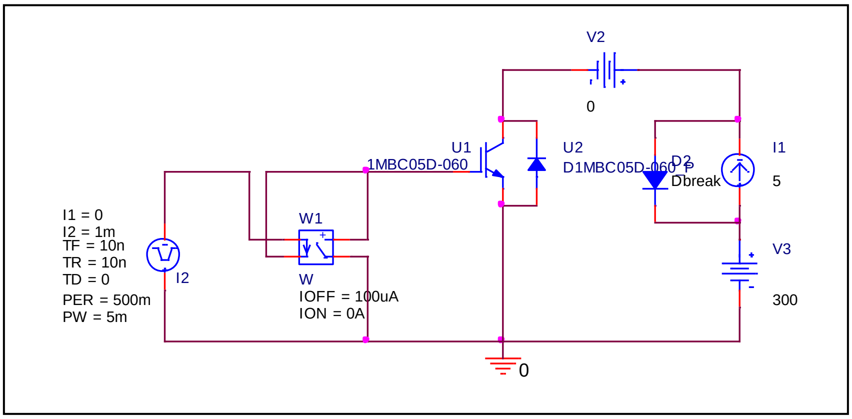
Gate Charge Characteristics

Circuit Simulation result



Evaluation circuit



Test condition: V_{CC}=300 (V), I_C=5 (A), V_{GE}=15 (V)

Parameter	Unit	Measurement	Simulation	%Error
Qge	nc	3.500	3.516	0.446
Qgc	nc	8.000	7.995	-0.065
Qg	nc	17.500	17.309	-1.091

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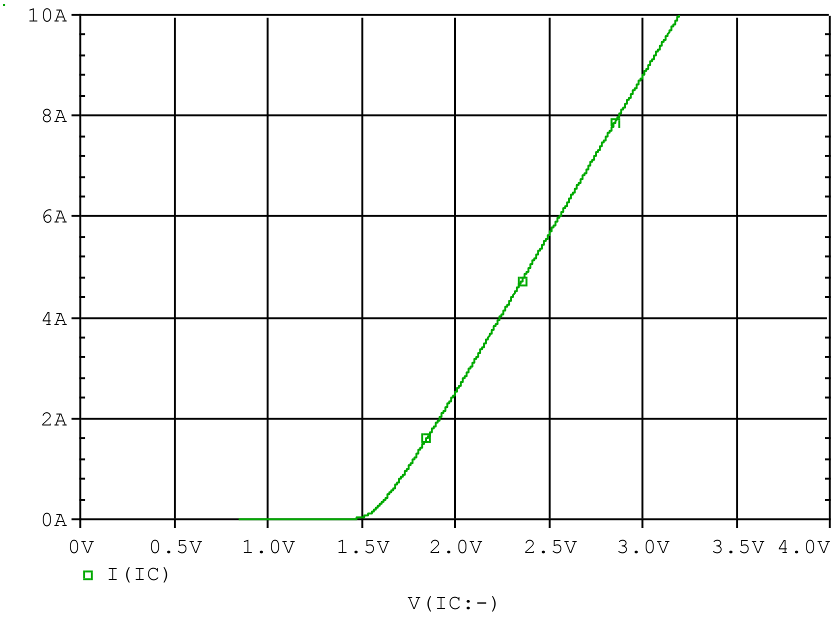
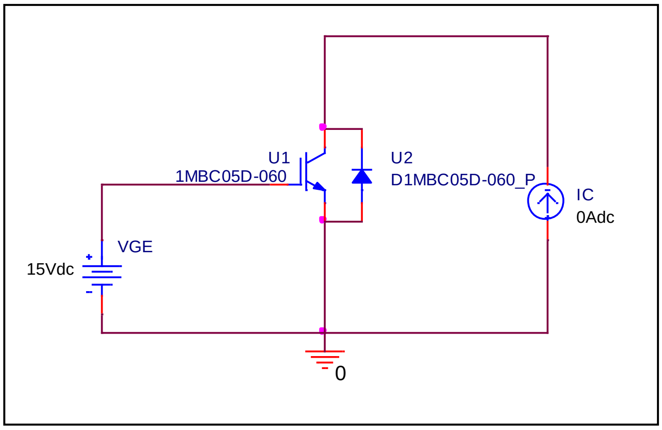
Saturation Characteristics

Circuit Simulation result



Evaluation circuit



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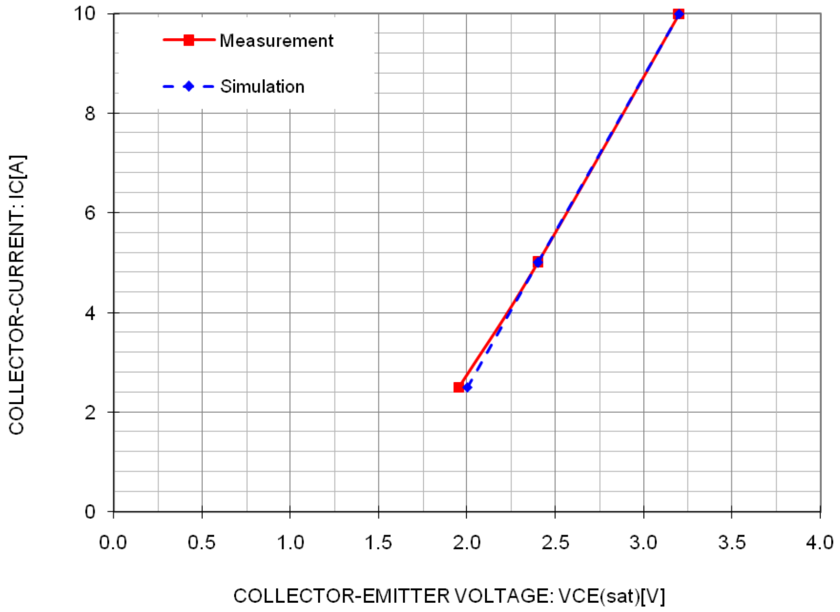
Comparison Graph

Simulation result



Comparison table

Test condition: VGE =15 (V)

Ic(A)	VCE (V)		%Error
	Measurement	Simulation	
2.5	1.950	2.000	2.55
5.0	2.400	2.399	-0.03
10.0	3.200	3.199	-0.04

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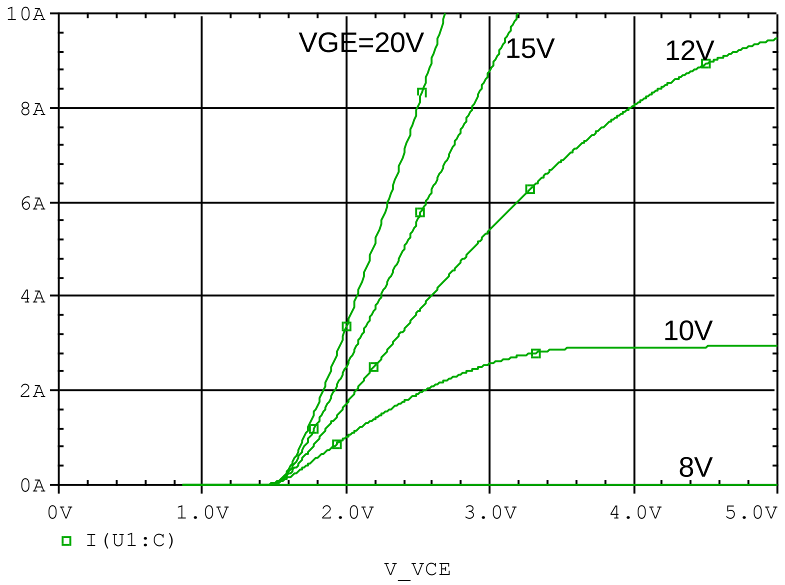
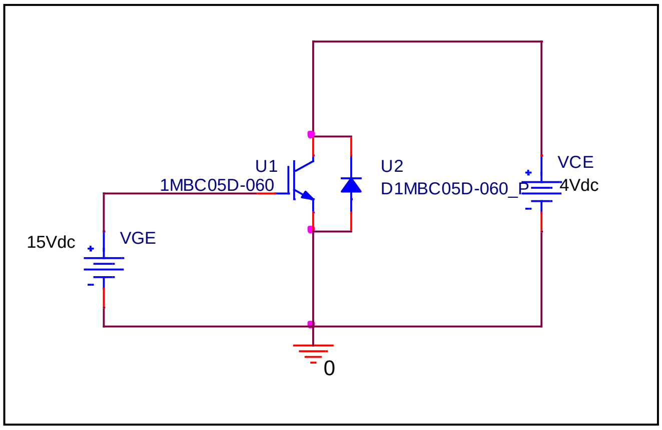
Output Characteristics

Circuit Simulation result



Evaluation circuit



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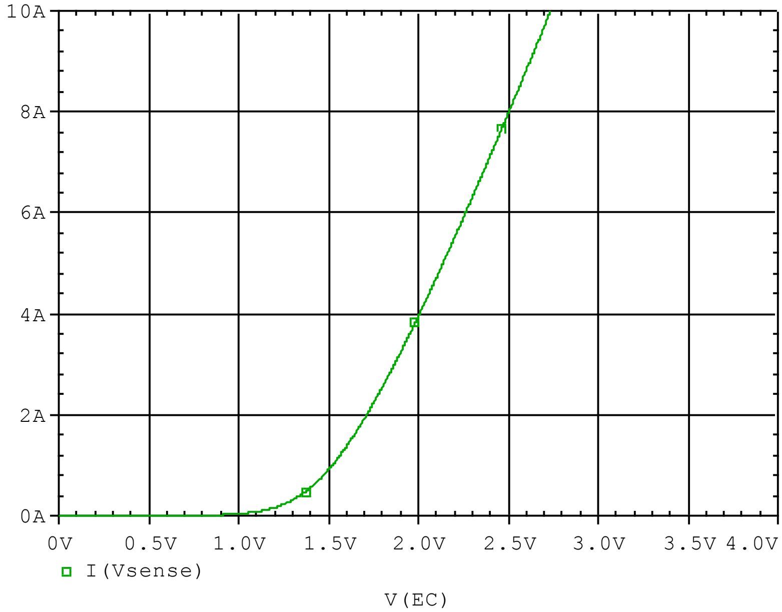
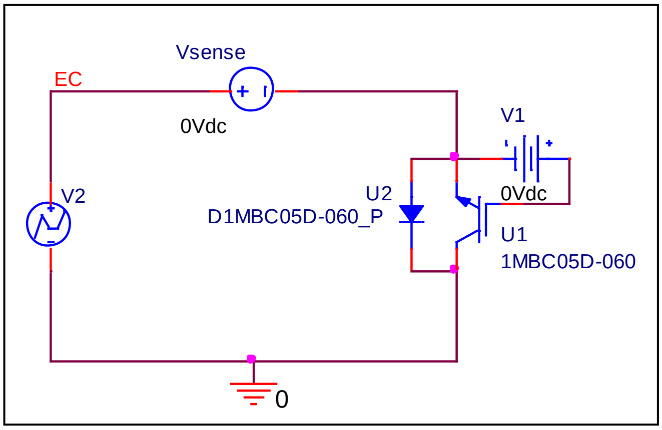
FWD Forward Current Characteristics

Circuit Simulation result

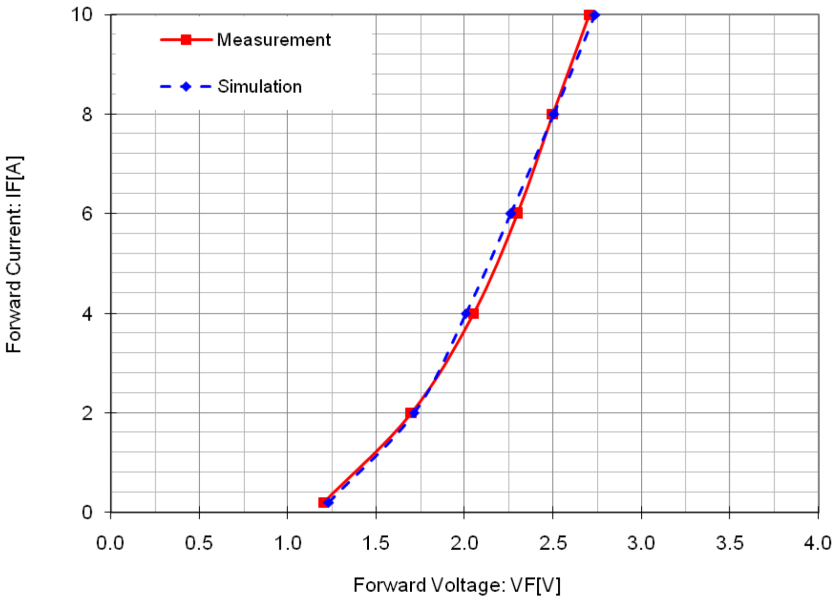


Evaluation circuit



Comparison Graph

Simulation result



Comparison table

IF(A)	VF (V)		%Error
	Measurement	Simulation	
0.2	1.200	1.232	2.67
2	1.700	1.713	0.76
4	2.050	2.006	-2.13
6	2.300	2.263	-1.63
8	2.500	2.504	0.15
10	2.700	2.736	1.35

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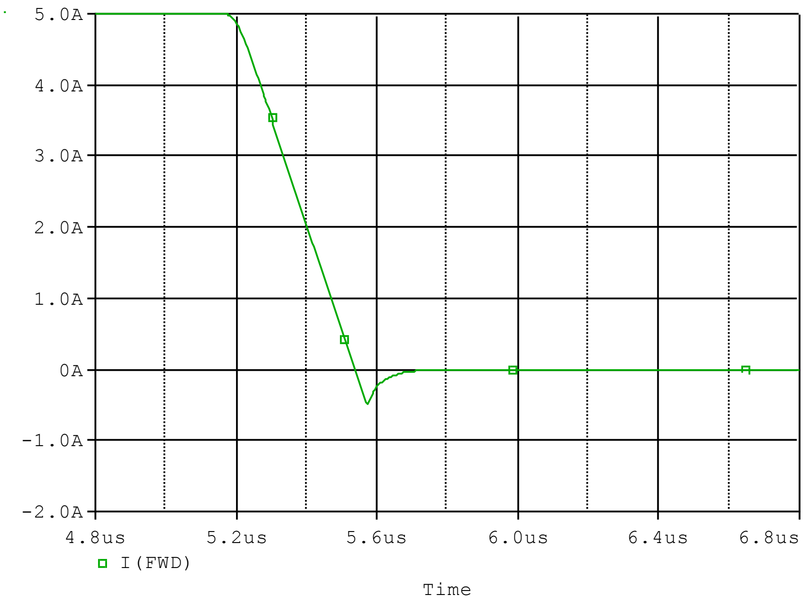
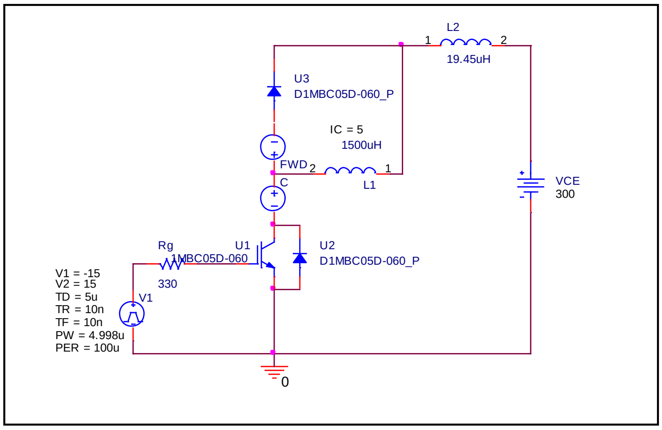
Reverse Recovery Characteristics

Circuit Simulation result



Evaluation circuit



Test condition: VCC=300 (V),IC=5 (A) ,-di/dt=15A/usec.

Parameter	Unit	Measurement	Simulation	%Error
trr	nsec	140.000	142.707	1.93
Irr	A	0.460	0.477	3.79

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