

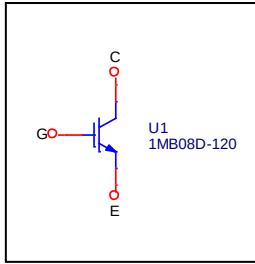
# Device Modeling Report

COMPONENTS: Insulated Gate Bipolar Transistor (IGBT)  
PART NUMBER: 1MB08D-120  
MANUFACTURER: FUJI ELECTRIC



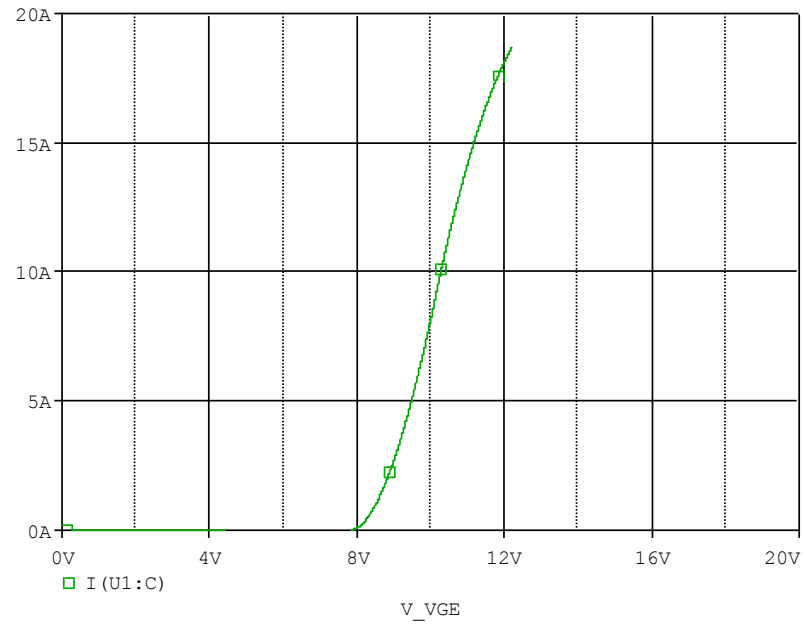
**Bee Technologies Inc.**

## Circuit Configuration

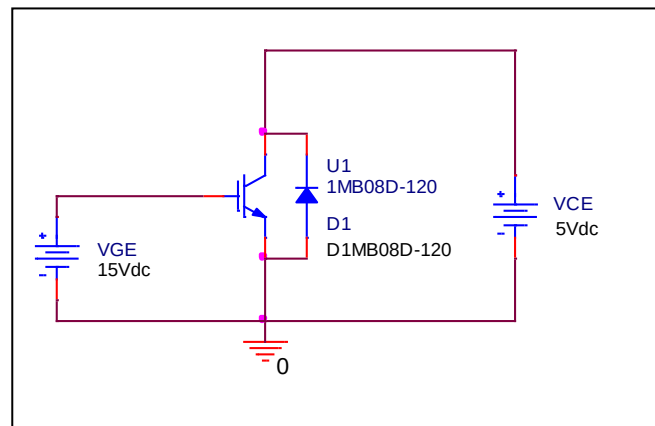


## Transfer Characteristics

### Circuit Simulation result

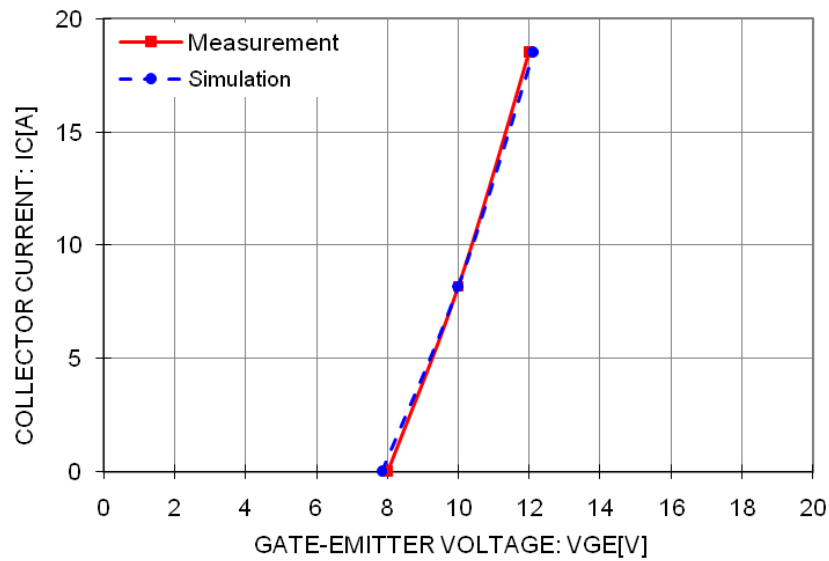


### Evaluation circuit



## Comparison Graph

Simulation result



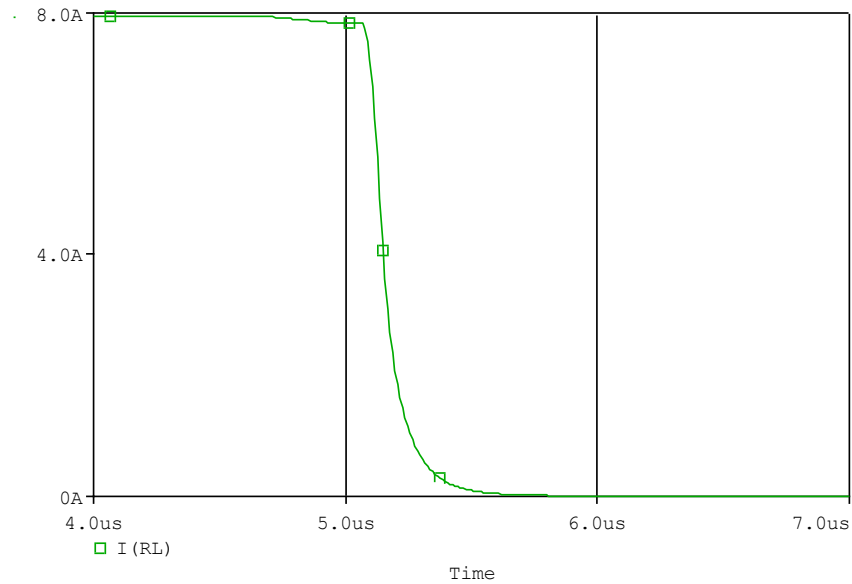
Comparison table

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

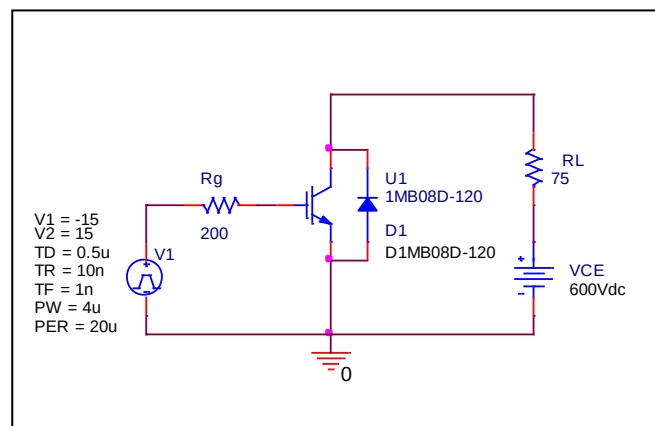
| IC (A) | VGE (V)     |            | %Error |
|--------|-------------|------------|--------|
|        | Measurement | Simulation |        |
| 0.000  | 8.000       | 7.844      | -1.95  |
| 8.200  | 10.000      | 10.011     | 0.11   |
| 18.500 | 12.000      | 12.137     | 1.14   |

## Fall Time Characteristics

### Circuit Simulation result



### Evaluation circuit

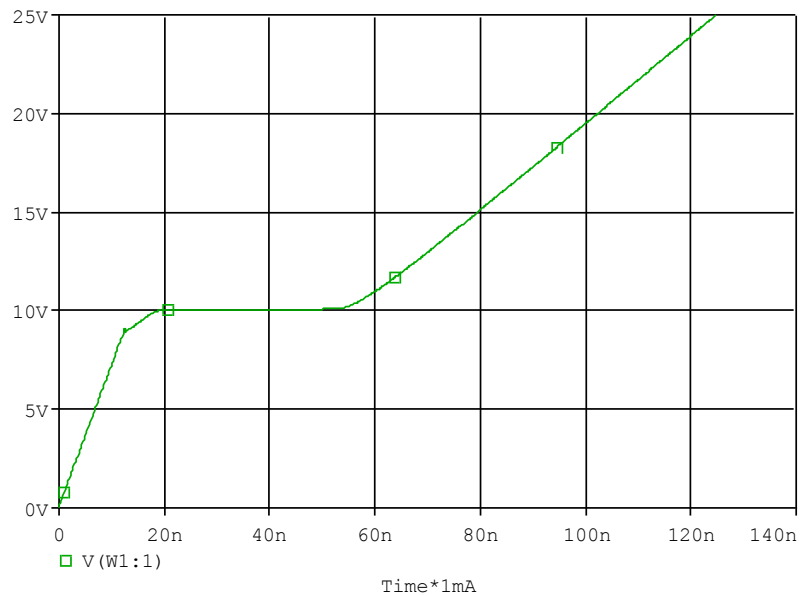


Test condition:  $I_C=8$  (A),  $V_{CC}=600$  (V)

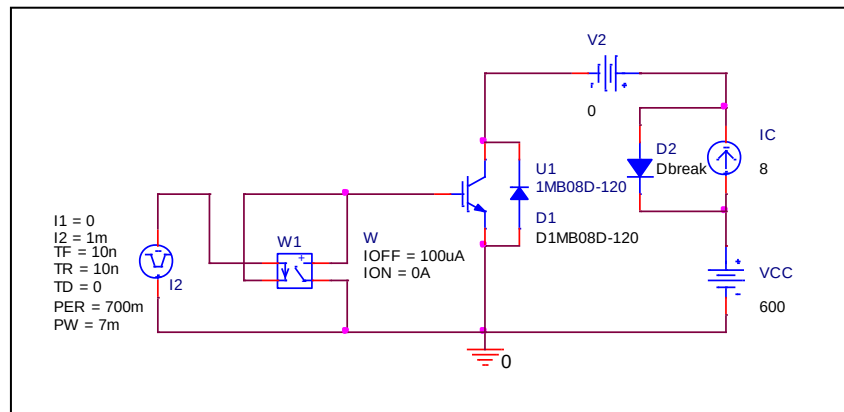
| Parameter | Unit | Measurement | Simulation | %Error |
|-----------|------|-------------|------------|--------|
| tf        | us   | 0.180       | 0.184      | 2.22   |

# Gate Charge Characteristics

## Circuit Simulation result



## Evaluation circuit

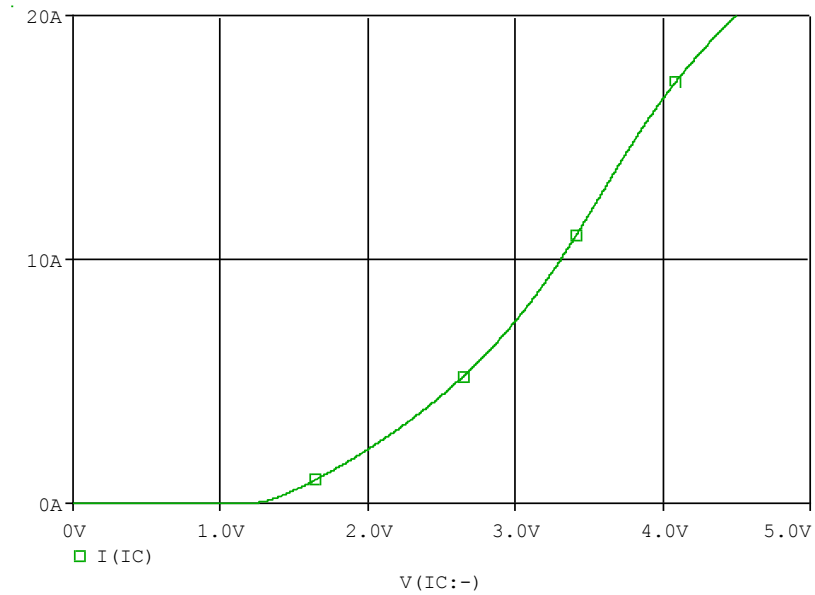


Test condition: VCC= 600 (V), IC=8 (A), VGE=15 (V)

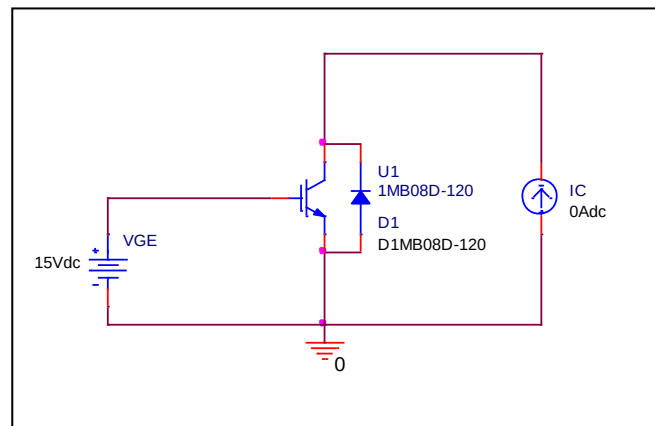
| Parameter | Unit | Measurement | Simulation | %Error |
|-----------|------|-------------|------------|--------|
| Qge       | nc   | 15.000      | 15.366     | 2.44   |
| Qgc       | nc   | 42.000      | 40.488     | -3.60  |
| Qg        | nc   | 80.000      | 80.307     | 0.38   |

## Saturation Characteristics

### Circuit Simulation result

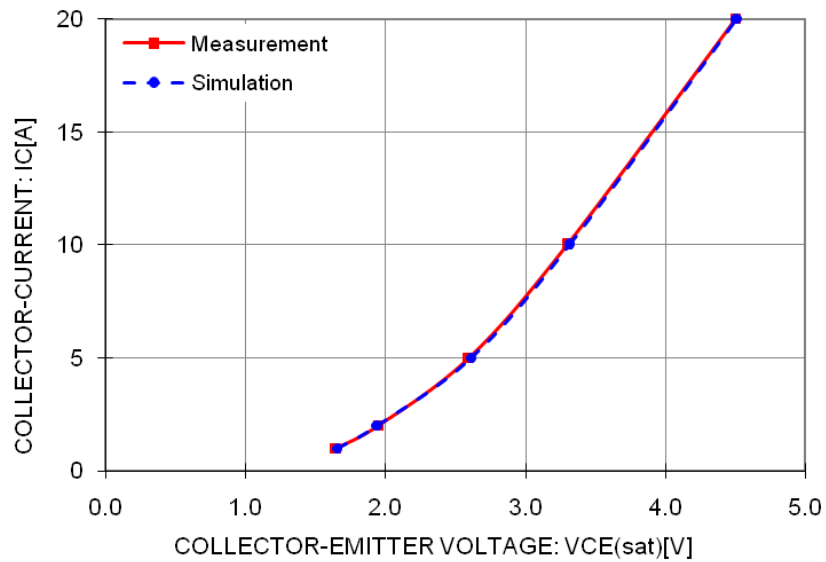


### Evaluation circuit



## Comparison Graph

Simulation result



Comparison table

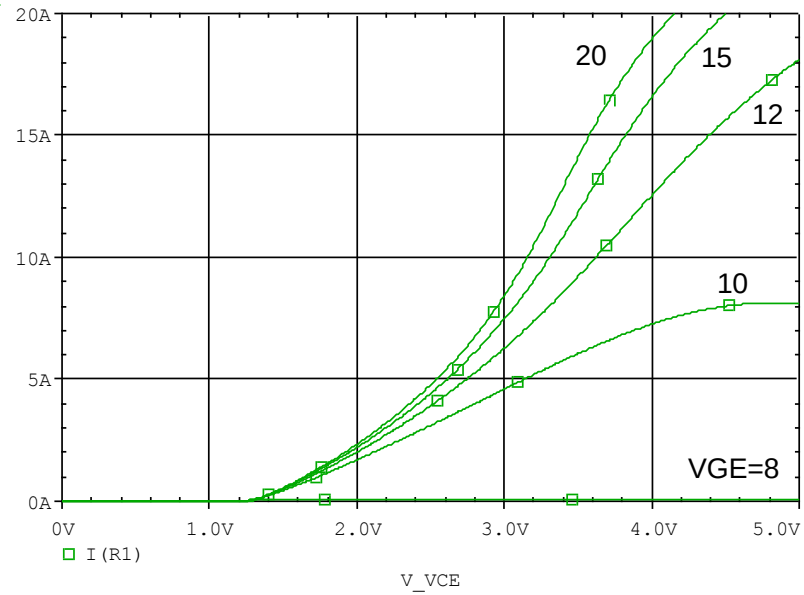
Test condition:  $V_{GE} = 15$  (V)

| Ic(A) | VCE (V)     |            | %Error |
|-------|-------------|------------|--------|
|       | Measurement | Simulation |        |
| 1     | 1.650       | 1.657      | 0.41   |
| 2     | 1.950       | 1.946      | -0.21  |
| 5     | 2.600       | 2.612      | 0.47   |
| 10    | 3.300       | 3.313      | 0.40   |
| 20    | 4.500       | 4.512      | 0.27   |

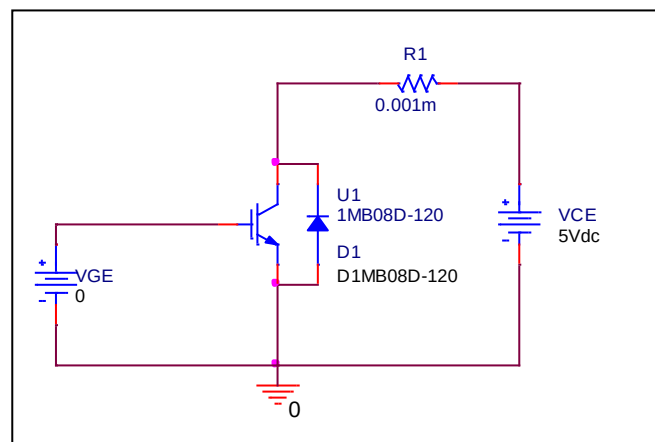


## Output Characteristics

### Circuit Simulation result

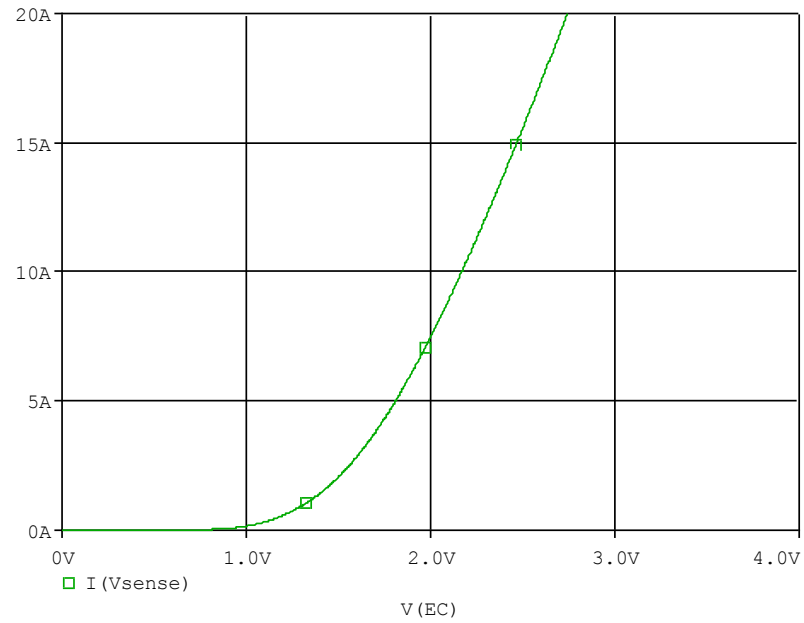


### Evaluation circuit

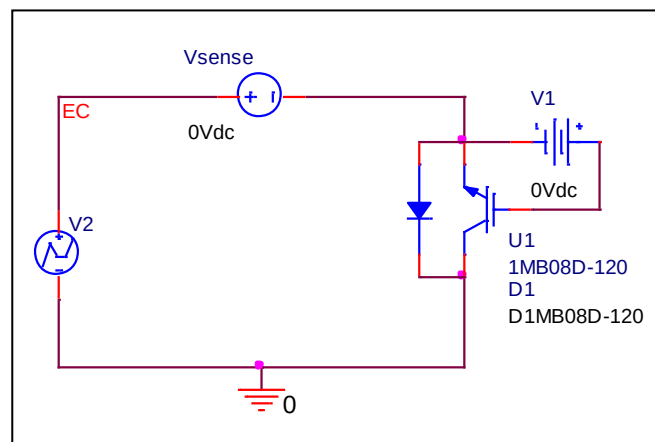


## FWD Forward Current Characteristics

### Circuit Simulation result

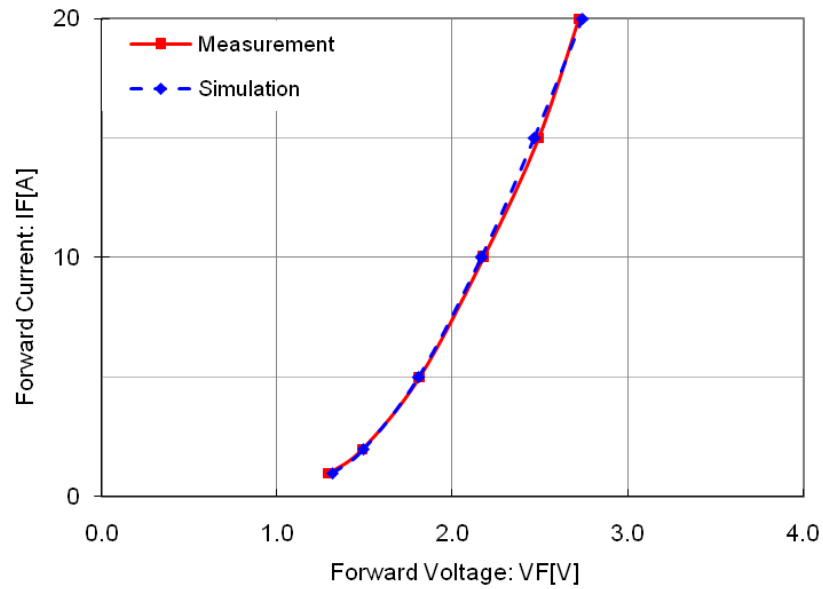


### Evaluation circuit



## Comparison Graph

Simulation result

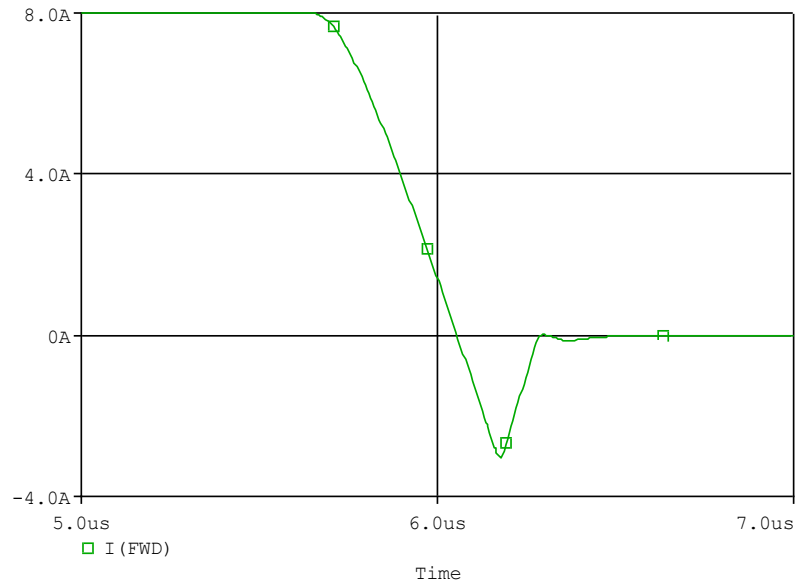


Comparison table

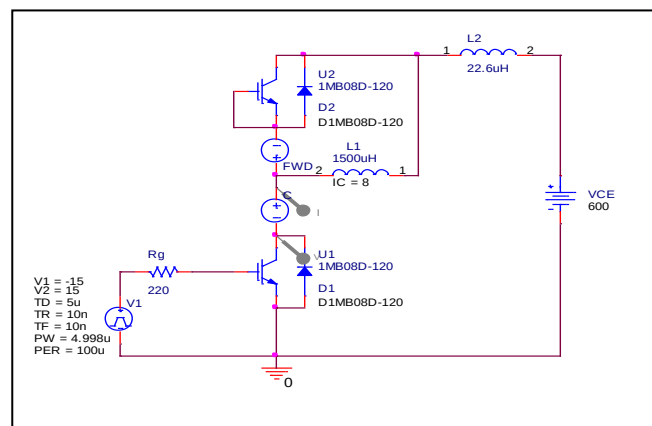
| IF(A) | VF (V)      |            | %Error |
|-------|-------------|------------|--------|
|       | Measurement | Simulation |        |
| 1     | 1.300       | 1.314      | 1.09   |
| 2     | 1.485       | 1.492      | 0.46   |
| 5     | 1.815       | 1.809      | -0.33  |
| 10    | 2.180       | 2.169      | -0.53  |
| 15    | 2.490       | 2.468      | -0.89  |
| 20    | 2.720       | 2.743      | 0.83   |

## Reverse Recovery Characteristics

### Circuit Simulation result



Evaluation circuit



**Test condition: Vcc=600 (V), Ic=8 (A), -di/dt= 24 (A/us)**

| Parameter | Unit | Measurement | Simulation | %Error |
|-----------|------|-------------|------------|--------|
| trr       | nsec | 210.000     | 217.808    | 3.72   |
| lrr       | A    | 3.000       | 3.042      | 1.40   |