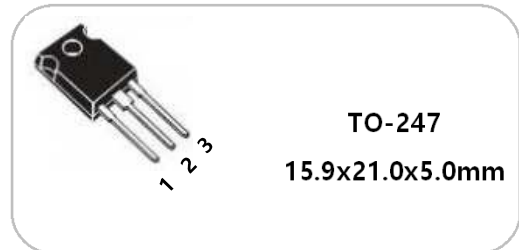


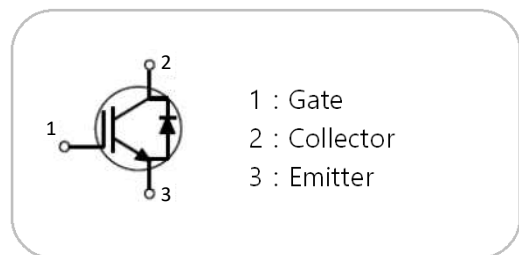

**General description**

Symbol	Value
$V_{CES}$ @ $T_C=25^\circ\text{C}$	Min 1200V
$I_C$ @ $T_C=100^\circ\text{C}$	25A
$V_{CE(sat)}$ @ $T_C=25^\circ\text{C}$	Typ 1.85V


**Package**


**Features**

- Low saturation pressure
- Fast switching speed
- Quick recovery diode



**Applications**

- DC-AC converters
- Power supplies
- Inverter
- Industrial UPS


**Maximum ratings ( $T_j = 25^\circ\text{C}$ )**

Parameter	Symbol	Test Condition	Value	Unit
Collector – emitter voltage	$V_{CES}$	$T_C=25^\circ\text{C}$	1200	V
Gate – emitter voltage	$V_{GES}$	-	$\pm 20$	V
DC collector current	$I_C$	$T_C=25^\circ\text{C}$	50	A
		$T_C=100^\circ\text{C}$	25	A
Pulsed collector current	$I_{C(pulse)}$	Pulse width $t_p$ limited by $T_{j,max}$	75	A
Diode forward current	$I_F$	$T_C=25^\circ\text{C}$	50	A
		$T_C=100^\circ\text{C}$	25	
Power dissipation	$P_D$	$T_C=25^\circ\text{C}$	250	W
Operating and storage temperature range	$T_{j, T_{stg}}$	-	-55 to 150	$^\circ\text{C}$




**Electrical characteristics ( $T_j = 25^\circ\text{C}$ )**

Parameter	Symbol	Test condition	Value			Unit
			Min	Typ	Max	
Collector - emitter breakdown voltage	$V_{(BR)CES}$	$I_C=250\mu\text{A}, V_{GE}=0\text{V}$	1200	-	-	V
Zero gate voltage collector current	$I_{CES}$	$V_{CE}=1200\text{V}, V_{GE}=0\text{V}$	-	-	1.0	mA
Gate - emitter leakage current	$I_{GES}$	$V_{GE}=\pm 20\text{V}$	-	-	$\pm 250$	nA
Collector - emitter saturation voltage	$V_{CE(sat)}$	$I_C=25\text{A}, V_{GE}=15\text{V}$	-	1.85	2.5	V
Gate - emitter threshold voltage	$V_{GE(th)}$	$I_C=250\mu\text{A}, V_{CE}=V_{GE}$	4.5	6.0	7.0	V
Input capacitance	$C_{ies}$	$V_{CE}=30\text{V}, V_{GE}=0\text{V}, f=1\text{MHz}$	-	2600	-	pF
Output capacitance	$C_{oes}$		-	110	-	
Reverse transfer capacitance	$C_{res}$		-	60	-	
Total gate charge	$Q_G$	$V_{CE}=600\text{V}, V_{GE}=15\text{V}, I_C=25\text{A}$	-	155	-	nC
Gate - emitter charge	$Q_{GE}$		-	25	-	
Gate - collector charge	$Q_{GC}$		-	90	-	
Turn on delay time	$t_{d(on)}$	$V_{CE}=600\text{V}, V_{GE}=15\text{V}, I_C=25\text{A}, R_G=10\Omega, T_a=25^\circ\text{C}$	-	60.0	-	ns
Rise time	$t_r$		-	45.0	-	
Turn off delay time	$t_{d(off)}$		-	250.0	-	
Fall time	$t_f$		-	30.0	-	
Turn-on energy	$E_{on}$		-	2.5	-	mJ
Turn-off energy	$E_{off}$		-	0.9	-	
Total switching energy	$E_{ts}$		-	3.3	-	



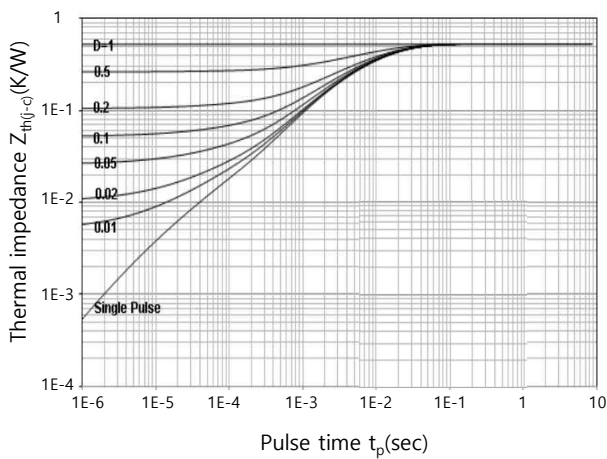
**Body diode(source – drain) electrical characteristics ( $T_j = 25^\circ\text{C}$ )**

Parameter	Symbol	Test condition	Value			Unit
			Min	Typ	Max	
Forward voltage	$V_F$	$I_F=25\text{A}$	-	2.3	-	V
Reverse recovery time	$t_{rr}$	$I_F=25\text{A}, di/dt=200\text{A}/\mu\text{s}$	-	270.0	-	ns
Reverse recovery charge	$Q_{rr}$		-	580.0	-	nC
Peak reverse Recovery current	$I_{rrm}$		-	4.5	-	A

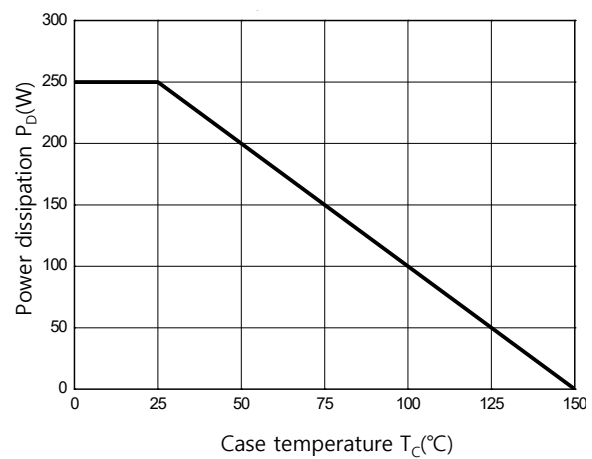
**Thermal characteristics ( $T_j = 25^\circ\text{C}$ )**

Symbol	Parameter	Typ	Max	Unit
$R_{th(j-c)}$	Junction to case	-	0.5	$^\circ\text{C}/\text{W}$

$t_p - Z_{th(j-c)}$  Characteristics

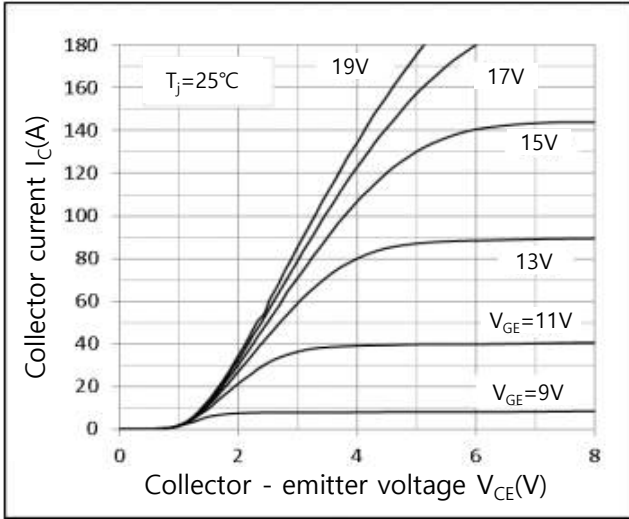


$T_C - P_D$  Characteristics

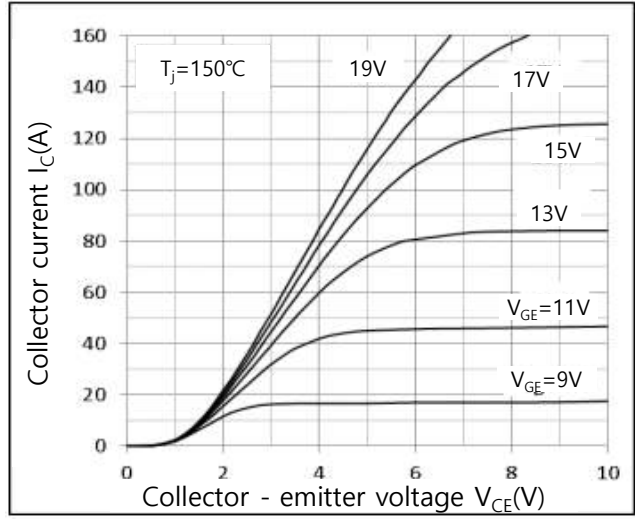


**Typical electrical characteristics curves ( $T_j = 25^\circ\text{C}$ )**

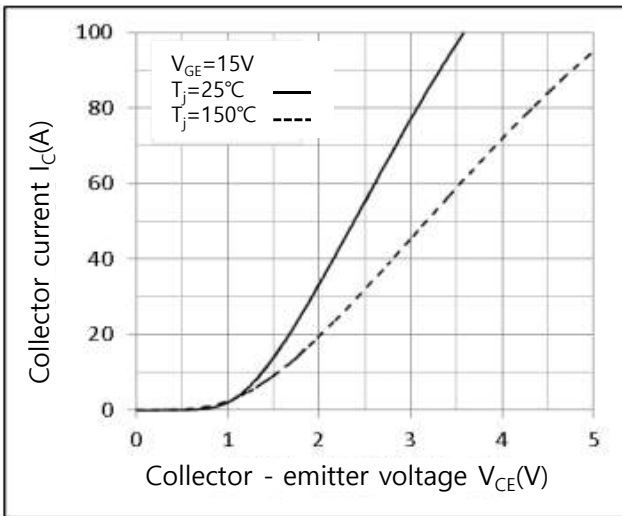
$V_{CE} - I_C$  Characteristics,  $T_j=25^\circ\text{C}$



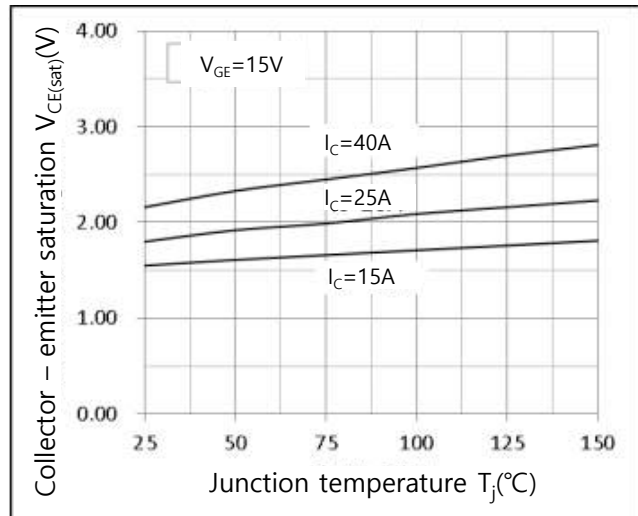
$V_{CE} - I_C$  Characteristics,  $T_j=150^\circ\text{C}$



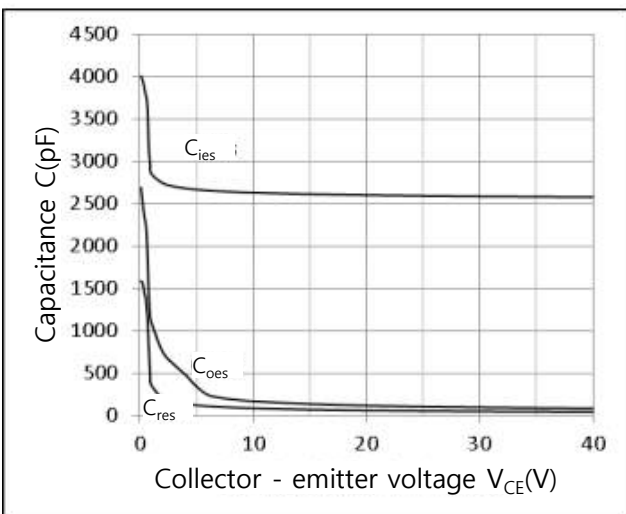
$V_{CE} - I_C$  Characteristics



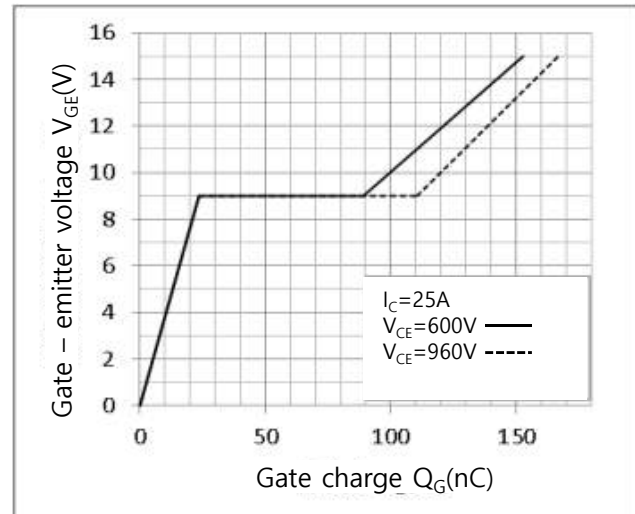
$T_j - V_{CE(sat)}$  Characteristics



$V_{CE} - C$  Characteristics

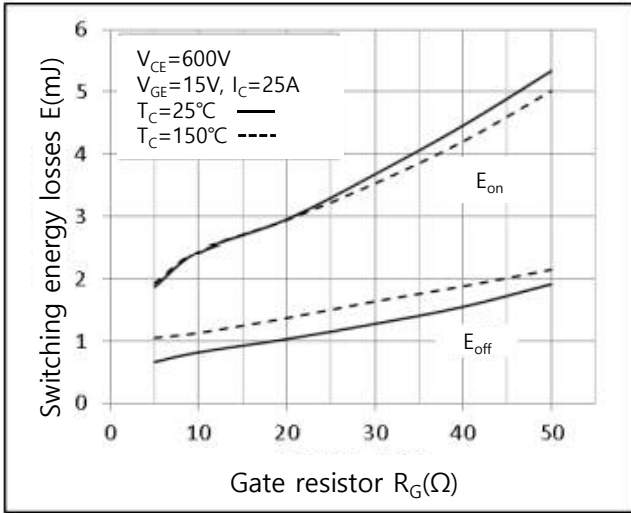


$Q_G - V_{GE}$  Characteristics

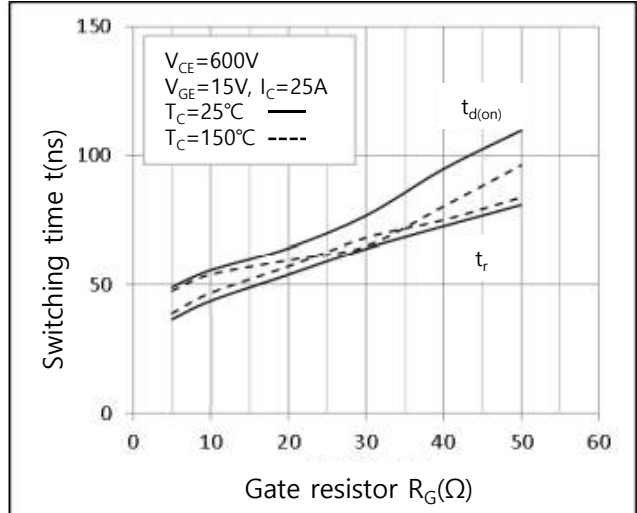


Typical electrical characteristics curves ( $T_j = 25^\circ\text{C}$ )

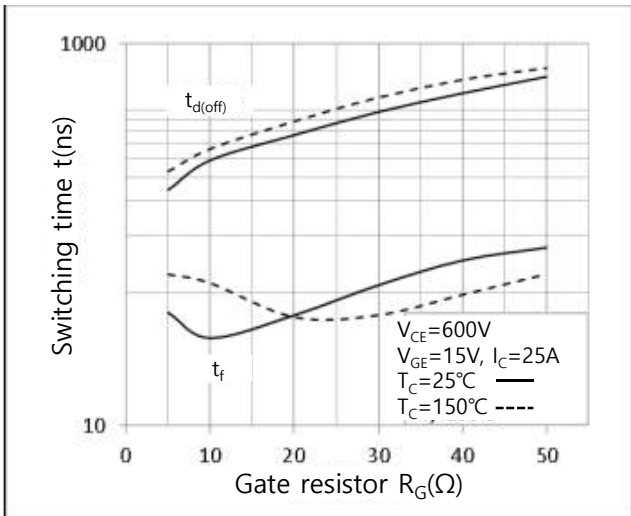
$R_G - E$  Characteristics



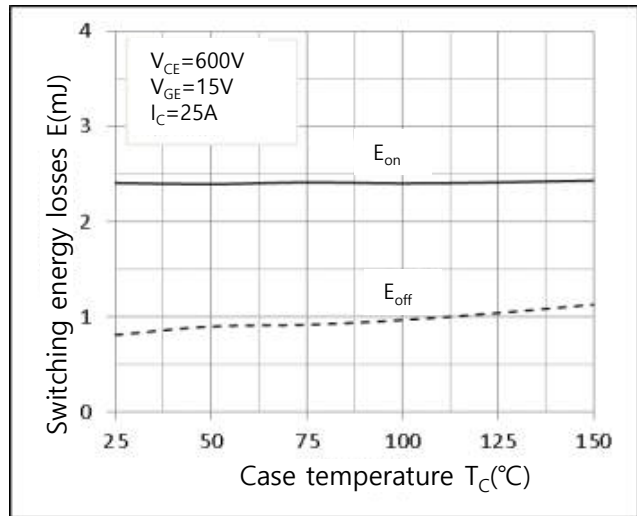
$R_G - t$  Characteristics



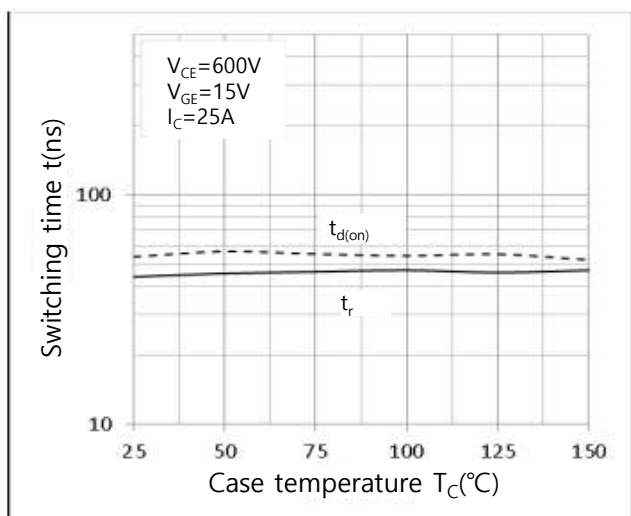
$R_G - t$  Characteristics



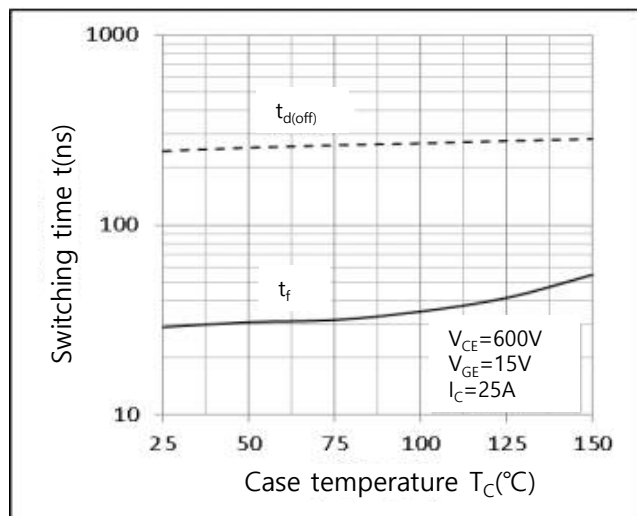
$T_C - E$  Characteristics



$T_C - t$  Characteristics

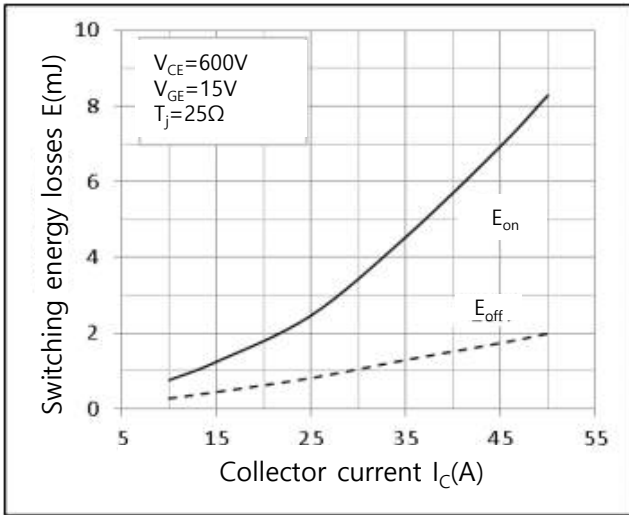


$T_C - t$  Characteristics

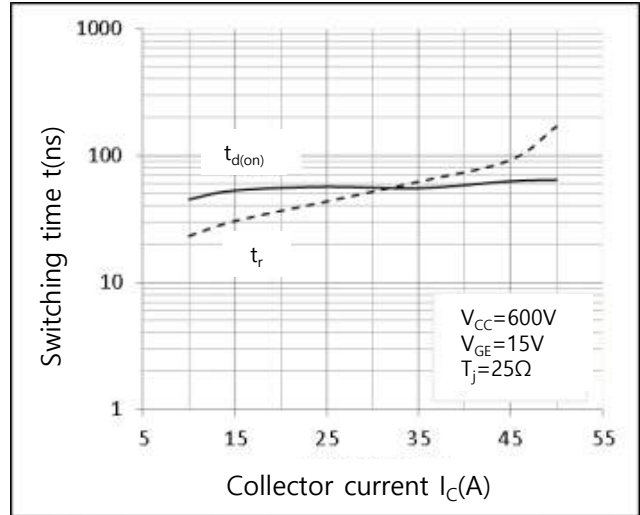


**Typical electrical characteristics curves ( $T_j = 25^\circ\text{C}$ )**

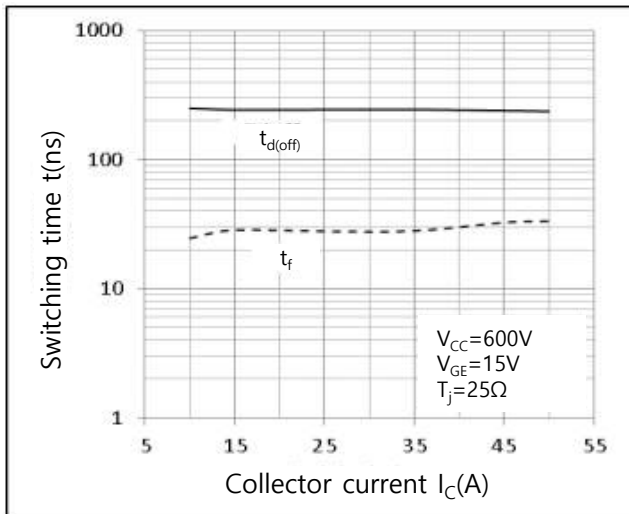
$I_C - E$  Characteristics



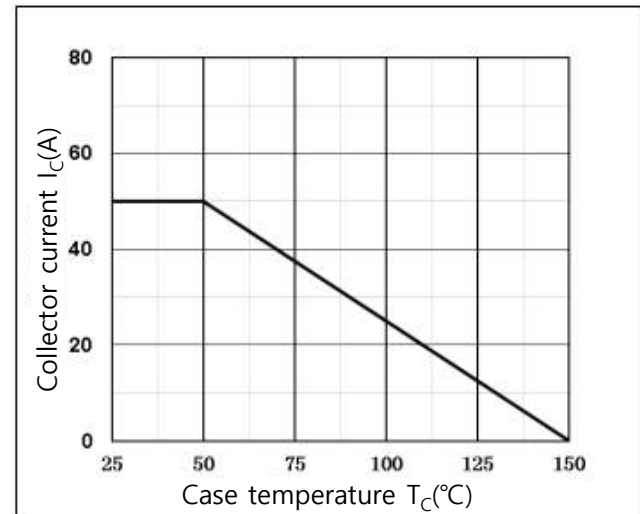
$I_C - t$  Characteristics



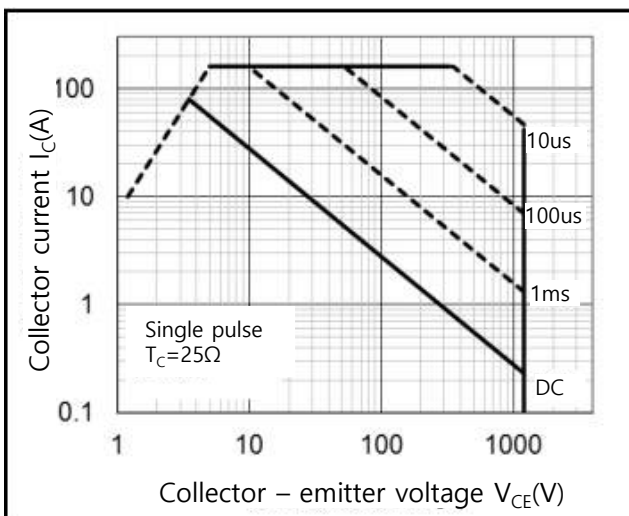
$I_C - t$  Characteristics



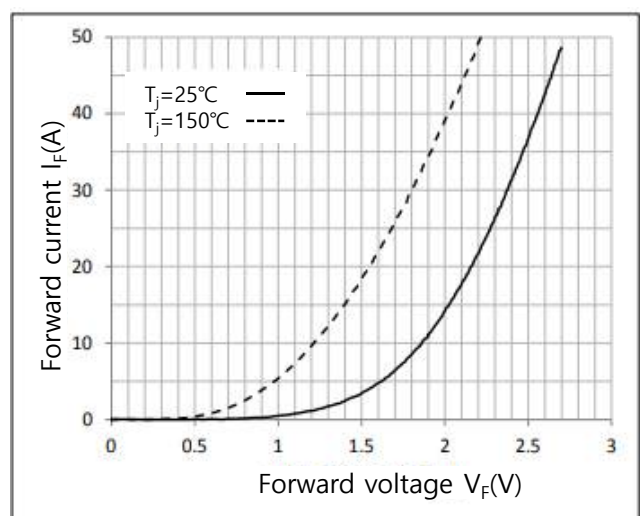
$T_C - I_C$  Characteristics



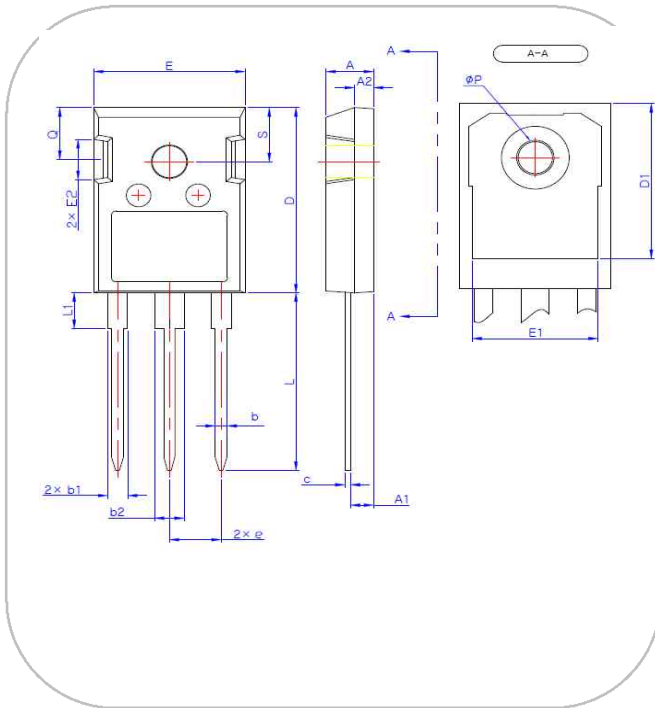
Safe operating area



$V_F - I_F$  Characteristics



**Package dimensions (TO-247)**



Symbol	Min	Nom	Max
A	4.80	5.00	5.20
A1	2.29	2.36	2.54
A2	1.90	2.00	2.10
b	1.10	1.20	1.30
b1	1.91	2.11	2.20
b2	2.92	3.10	3.20
c	0.50	0.60	0.70
D	20.80	21.07	21.34
D1	17.43	17.63	17.83
E	15.75	15.94	16.13
E1	13.06	13.26	13.46
E2	4.32	4.58	4.83
e	5.45 BSC		
L	19.85	20.00	20.25
L1	-	-	4.49
ØP	3.55	3.60	3.65
Q	5.59	5.89	6.19
S	6.15 BSC		

**Marking information**

