

Switching Characteristic, Inductive Load, at $T_j=25^\circ\text{C}$

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
IGBT Characteristic						
Turn-on delay time	$t_{d(on)}$	$T_j=25^\circ\text{C}$, $V_{CC}=600\text{V}$, $I_C=25\text{A}$, $V_{GE}=-15/15\text{V}$, $R_G=22\Omega$, $L_{\sigma}^{2)}=180\text{nH}$, $C_{\sigma}^{2)}=39\text{pF}$ Energy losses include "tail" and diode reverse recovery.	-	50	-	ns
Rise time	t_r		-	30	-	
Turn-off delay time	$t_{d(off)}$		-	560	-	
Fall time	t_f		-	70	-	
Turn-on energy	E_{on}		-	2.0	-	mJ
Turn-off energy	E_{off}		-	2.2	-	
Total switching energy	E_{ts}		-	4.2	-	

Switching Characteristic, Inductive Load, at $T_j=150^\circ\text{C}$

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
IGBT Characteristic						
Turn-on delay time	$t_{d(on)}$	$T_j=150^\circ\text{C}$ $V_{CC}=600\text{V}$, $I_C=25\text{A}$, $V_{GE}=-15/15\text{V}$, $R_G=22\Omega$, $L_{\sigma}^{2)}=180\text{nH}$, $C_{\sigma}^{2)}=39\text{pF}$ Energy losses include "tail" and diode reverse recovery.	-	50	-	ns
Rise time	t_r		-	32	-	
Turn-off delay time	$t_{d(off)}$		-	660	-	
Fall time	t_f		-	130	-	
Turn-on energy	E_{on}		-	3.0	-	mJ
Turn-off energy	E_{off}		-	4.0	-	
Total switching energy	E_{ts}		-	7.0	-	

²⁾ Leakage inductance L_{σ} and Stray capacity C_{σ} due to dynamic test circuit in Figure E.

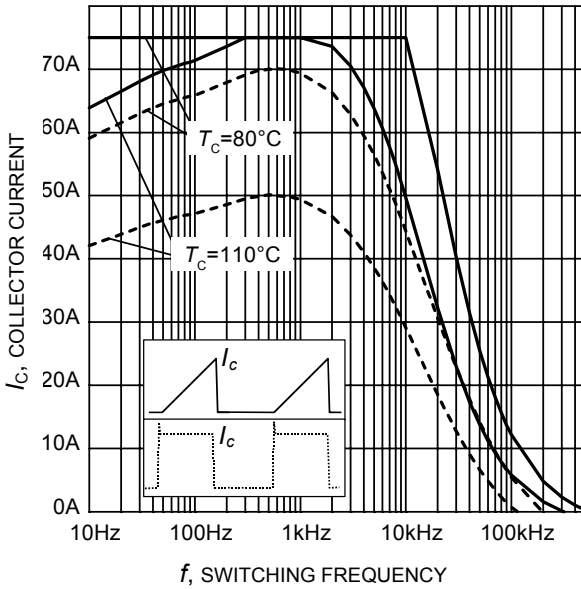


Figure 1. Collector current as a function of switching frequency
 ($T_j \leq 150^\circ\text{C}$, $D = 0.5$, $V_{CE} = 600\text{V}$,
 $V_{GE} = 0/+15\text{V}$, $R_G = 22\Omega$)

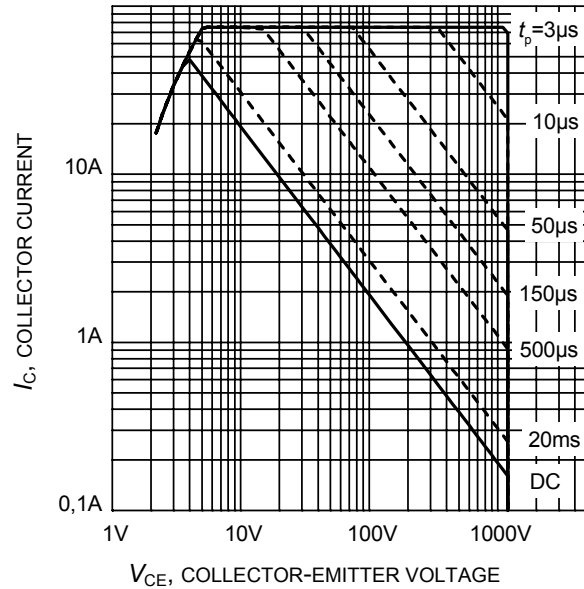


Figure 2. Safe operating area
 ($D = 0$, $T_C = 25^\circ\text{C}$,
 $T_j \leq 150^\circ\text{C}$; $V_{GE} = 15\text{V}$)

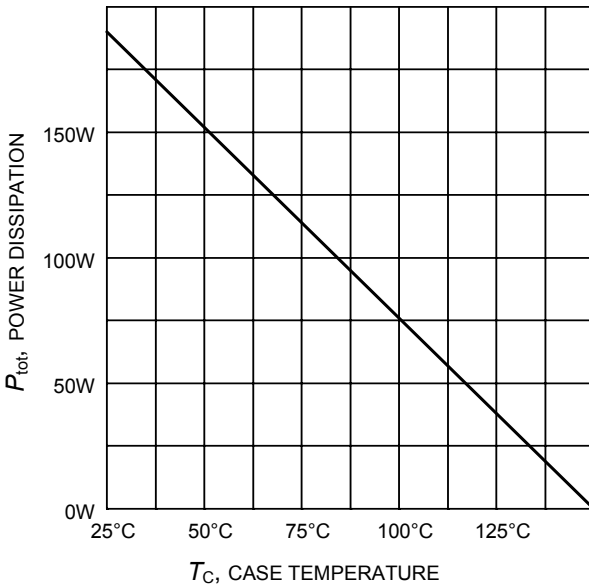


Figure 3. Power dissipation as a function of case temperature
 ($T_j \leq 150^\circ\text{C}$)

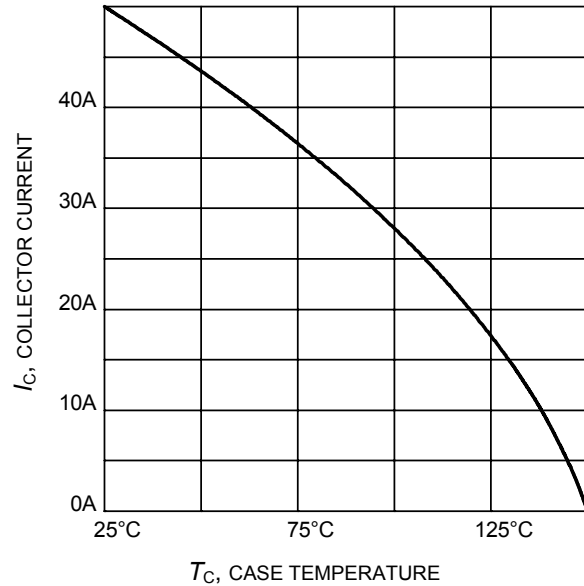


Figure 4. Collector current as a function of case temperature
 ($V_{GE} \geq 15\text{V}$, $T_j \leq 150^\circ\text{C}$)