

DESCRIPTION

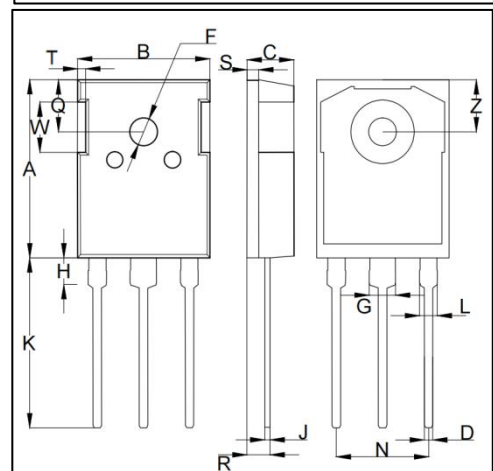
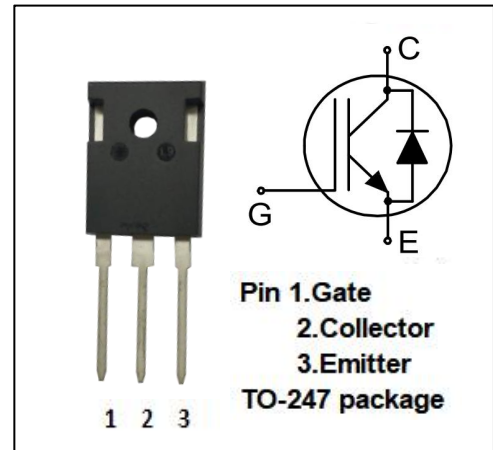
- Low Saturation Voltage: $V_{CE(sat)}=2.05V@I_C=25A$
- Very soft, fast recovery anti-parallel diode
- Low Switching Losses

APPLICATIONS

- Uninterrupted Power Supply
- Air Conditioning
- welding converters

ABSOLUTE MAXIMUM RATINGS

SYMBOL	PARAMETER	VALUE	UNIT
V_{CES}	Collector-Emitter Voltage	1200	V
V_{GES}	Gate-Emitter Voltage	± 20	V
I_C	Collector Current-Continuous @ $T_C=25^\circ C$	50	A
I_C	Collector Current-Continuous @ $T_C=100^\circ C$	25	A
I_{CM}	Pulsed Collector Current	100	A
I_F	Diode Forward Current @ $T_C=25^\circ C$	25	A
I_F	Diode Forward Current @ $T_C=100^\circ C$	12.5	A
I_{FM}	Pulsed Diode Maximum Forward current @ $T_C=25^\circ C$	100	A
P_D	Power Dissipation , $T_C=25^\circ C$	326	W
T_j	Max. Operating Junction Temperature	175	$^\circ C$
T_{stg}	Storage Temperature Range	-55~175	$^\circ C$



DIM	mm		
	MIN	TYP.	MAX
A	19.80	20.65	21.50
B	15.40	15.65	15.90
C	4.70	5.00	5.30
D	0.90	1.08	1.26
F	3.50	3.70	3.90
G	2.70	3.00	3.30
H	3.90	4.00	4.10
J	0.50	0.60	0.70
K	19.50	20.00	20.50
L	1.90	2.05	2.20
N	10.80	10.90	11.00
Q	6.00	6.15	6.30
R	2.90	3.10	3.30
S	1.80	2.00	2.20
T	2.15	2.25	2.35
W	4.90	5.00	5.10
Z	6.00	6.15	6.30

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\ j-c}$	Thermal Resistance, Junction to Case IGBT	0.46	$^{\circ}C/W$
$R_{th\ j-c}$	Thermal Resistance, Junction to Case Diode	1.49	$^{\circ}C/W$

ELECTRICAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	MIN	TYPE	MAX	UNIT
V_{CES}	Collector-Emitter Breakdown Voltage	$V_{GE}=0$; $I_C=0.5mA$	1200	--	--	V
$V_{GE(th)}$	Gate-Emitter Threshold Voltage 	$V_{GE}=V_{CE}$; $I_C=0.85mA$	5.0	5.5	6.5	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=25A$; $V_{CE}=15V$, $T_C=25^{\circ}C$	--	2.05	2.4	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=40A$; $V_{CE}=15V$, $T_C=125^{\circ}C$	--	2.5	--	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=40A$; $V_{CE}=15V$, $T_C=175^{\circ}C$	--	1.85	--	V
I_{CES}	Zero Gate Voltage Collector Current	$V_{CE}=1200V$; $V_{GE}=0$	-	--	250	μA
I_{GES}	Gate-Emitter Leakage Current	$V_{GE}=\pm 20V$; $V_{CE}=0$	--	--	± 600	nA
g_{ts}	Forward Transconductance	$I_C=25A$; $V_{CE}=20V$	--	13	--	S
C_{ies}	Input Capacitance	$V_{GS}=0V$, $V_{CS}=25V$, $f=1.0MHz$	--	1468	--	pF
C_{oes}	Output Capacitance		--	162	--	
C_{res}	Reverse Transfer Capacitance		--	82	--	
Q_g	Total Gate Charge	$V_{GE}=15V$, $I_C=25A$, $V_{CE}=0.5V_{CES}$	--	122	--	nC
Q_{gs}	Gate-Source Charge		--	8.7	--	
Q_{gd}	Gate-Drain Charge		--	89	--	

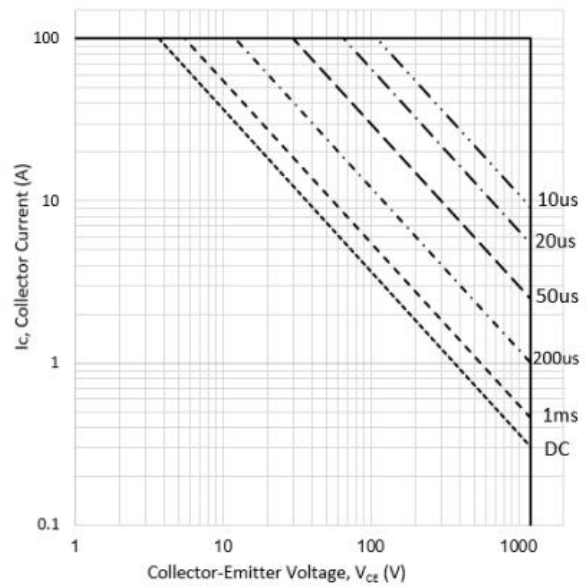
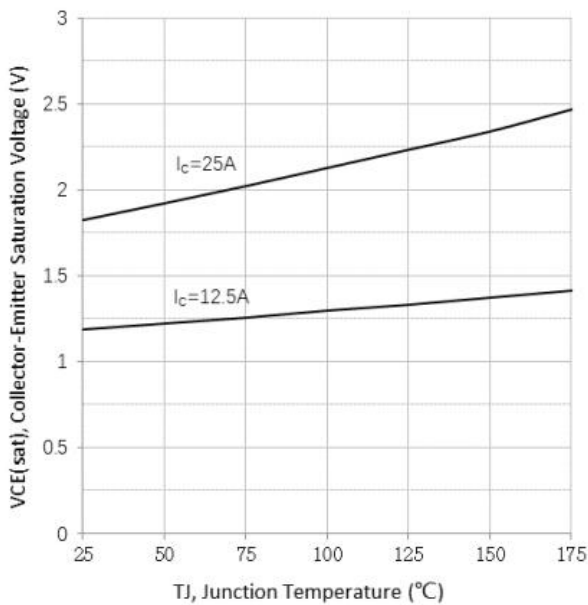
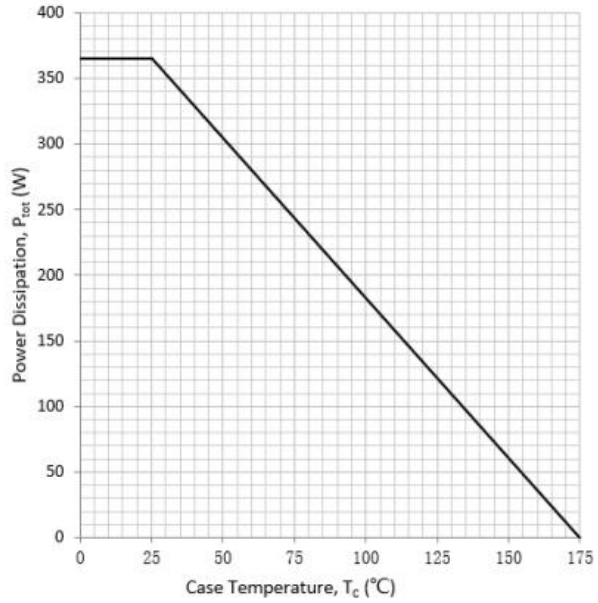
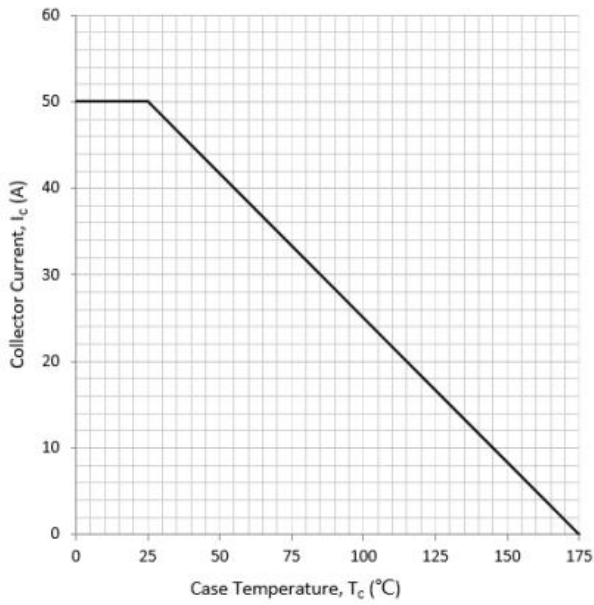
Trench and Field-Stop IGBT

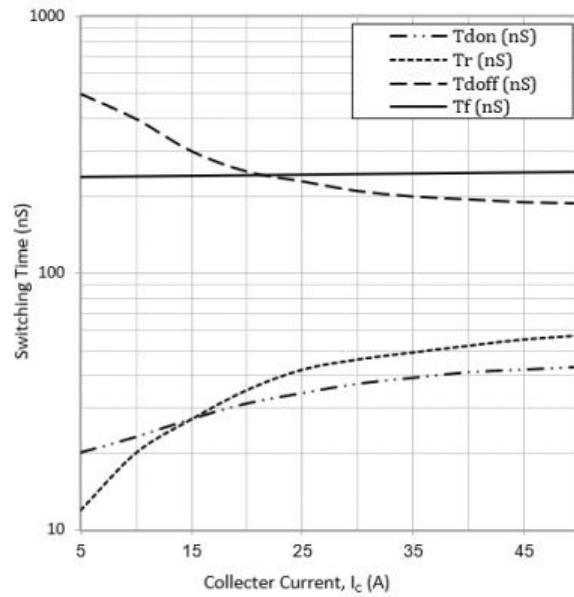
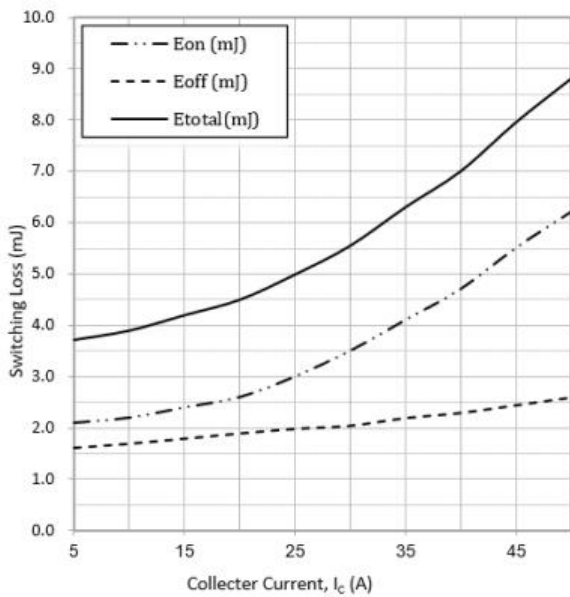
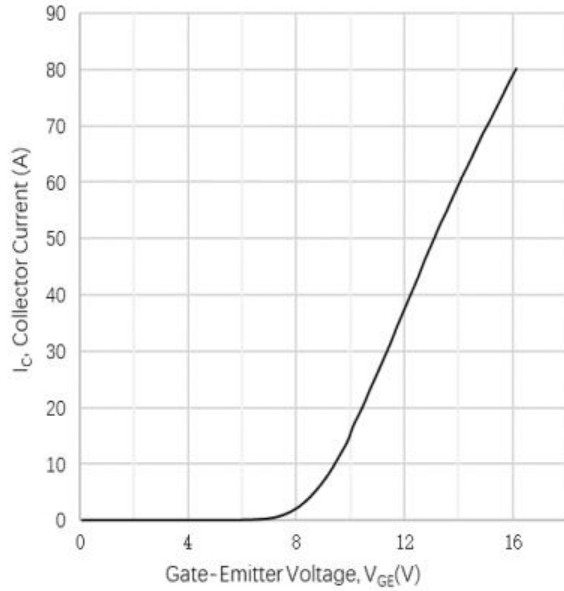
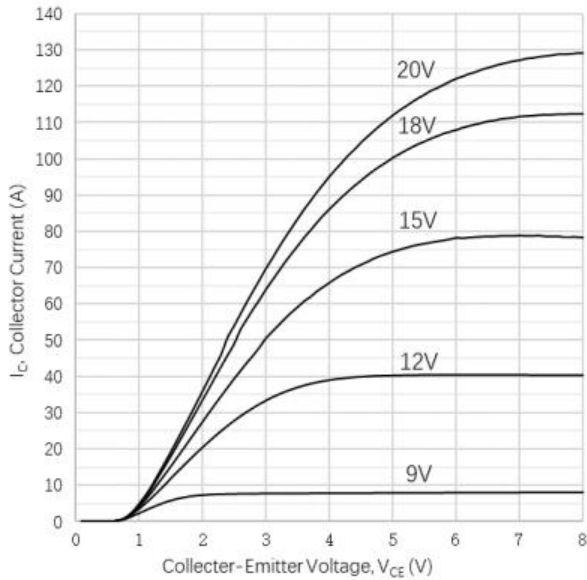
SYMBOL	PARAMETER	CONDITIONS	MIN	TYPE	MAX	UNIT
$t_{d(on)}$	Turn-on Delay Time	$V_{GE} = 15V,$ $I_c = 25A,$ $V_{CE} = 0.5V_{CES},$ $R_G = R_{off} = 20\Omega$ $T_J = 25^\circ C$	--	34	--	ns
t_r	Turn-on Rise Time		--	42	--	
$t_{d(off)}$	Turn-off Delay Time		--	229	--	
t_f	Turn-off Fall Time		--	242	--	
E_{on}	Turn-on switching loss		--	3.0	--	mJ
E_{off}	Turn-off switching loss		--	1.99	--	
E_{ts}	Total switching loss		--	4.99	--	
$t_{d(on)}$	Turn-on Delay Time	$V_{GE} = 15V,$ $I_c = 40A,$ $V_{CE} = 0.5V_{CES},$ $R_G = R_{off} = 10\Omega$ $T_J = 150^\circ C$	--	31	--	ns
t_r	Turn-on Rise Time		--	53	--	
$t_{d(off)}$	Turn-off Delay Time		--	296	--	
t_f	Turn-off Fall Time		--	398	--	
E_{on}	Turn-on switching loss		--	3.46	--	mJ
E_{off}	Turn-off switching loss		--	2.86	--	
E_{ts}	Total switching loss		--	6.31	--	

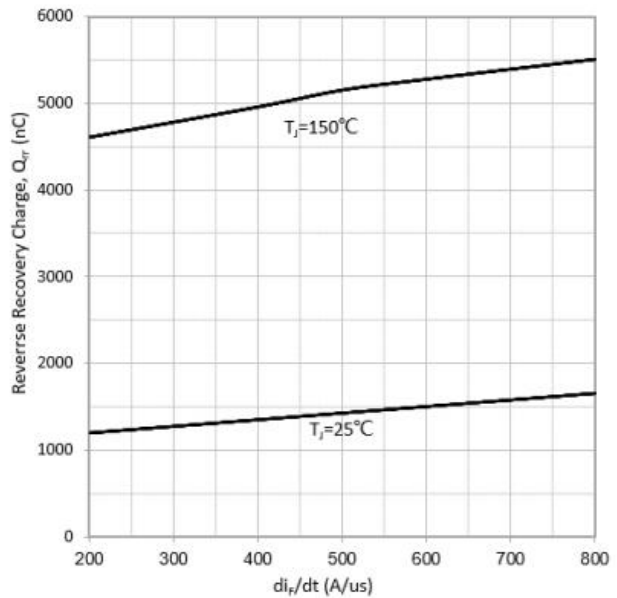
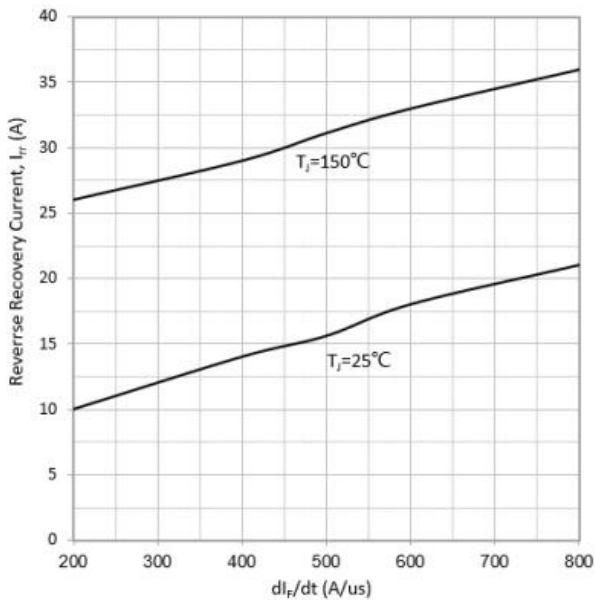
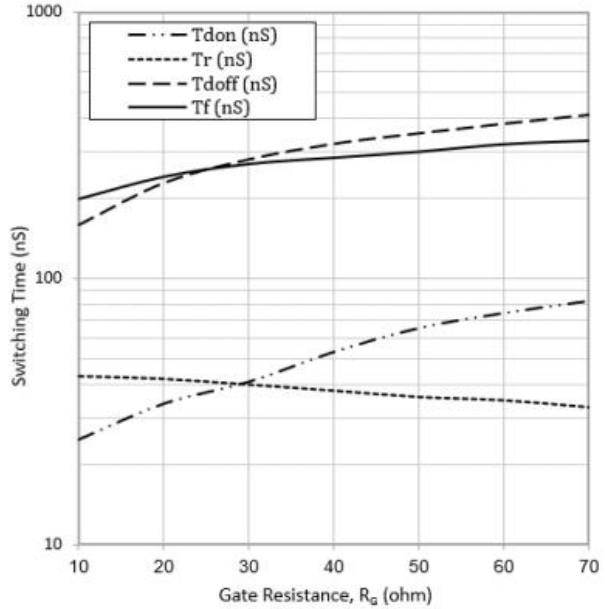
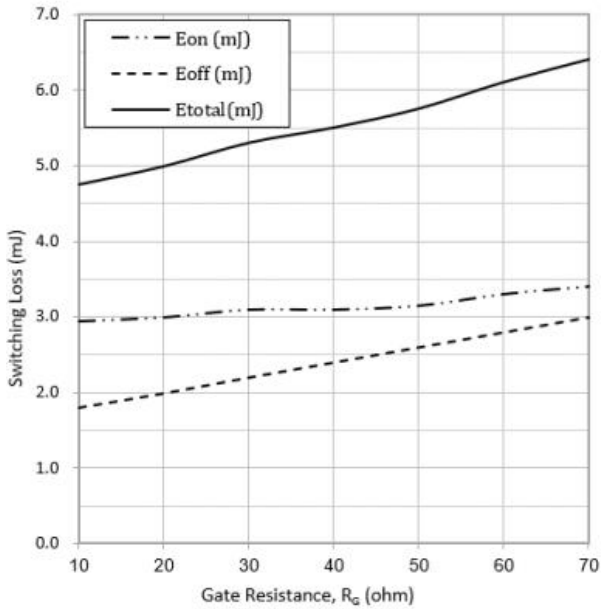
REVERSE DIODE (FRED)

SYMBOL	PARAMETER	CONDITIONS	MIN	TYPE	MAX	UNIT
V_F	Diode Forward Voltage	$I_F = 12.5A; T_C = 25^\circ C$ $I_F = 12.5A; T_C = 175^\circ C$	--	1.80 1.85	2.35	V
V_F	Diode Forward Voltage	$I_F = 25A; T_C = 25^\circ C$ $I_F = 25A; T_C = 125^\circ C$ $I_F = 25A; T_C = 1725^\circ C$	--	2.40 2.60 2.60	3.05 -- --	V
I_{RM}	Reverse recovery current	$VR = 600V:$ $IF = 25A; -diF/dt = 500A/us$ $TvJ = 25^\circ C$	--	10.4	--	A
t_{rr}	Reverse Recovery Time		--	348	--	ns

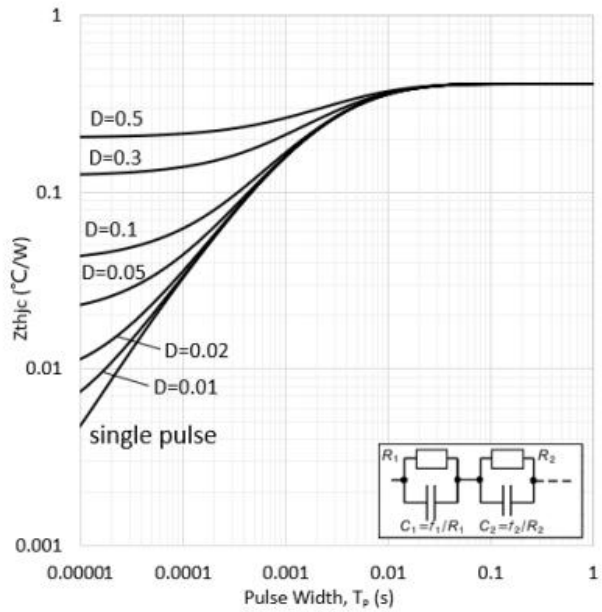
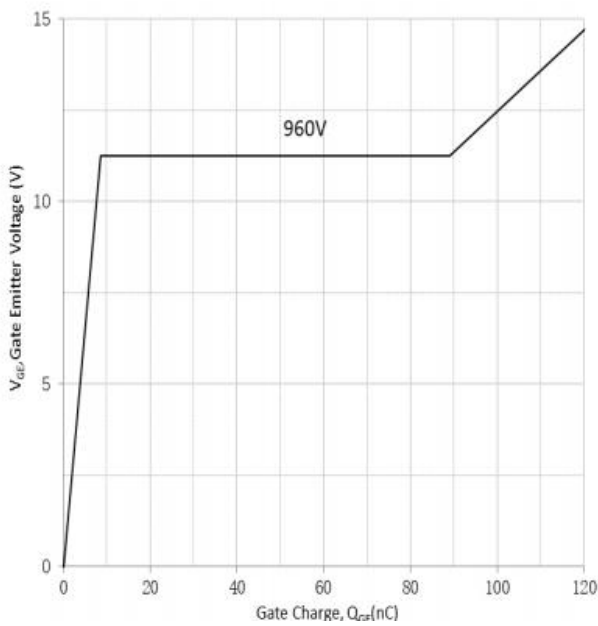
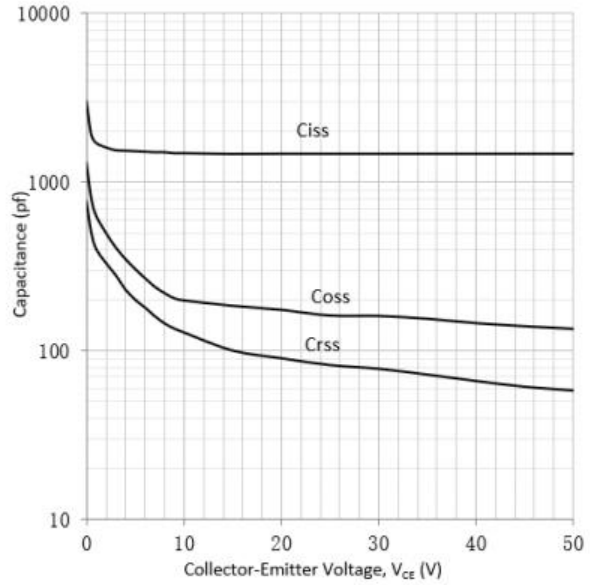
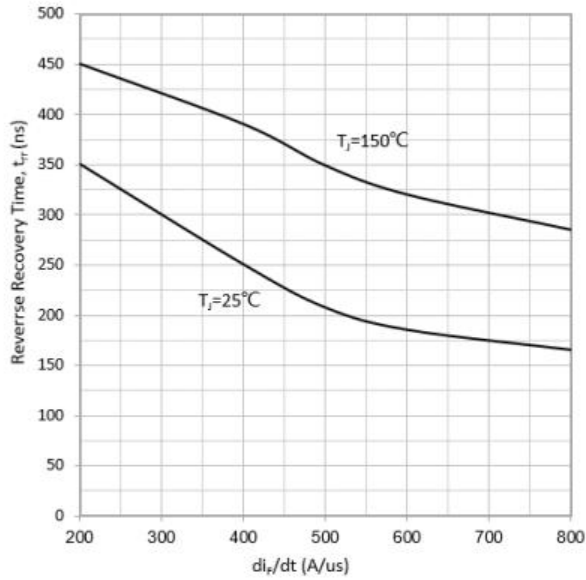
TYPICAL CHARACTERISTICS CURVES







Trench and Field-Stop IGBT



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