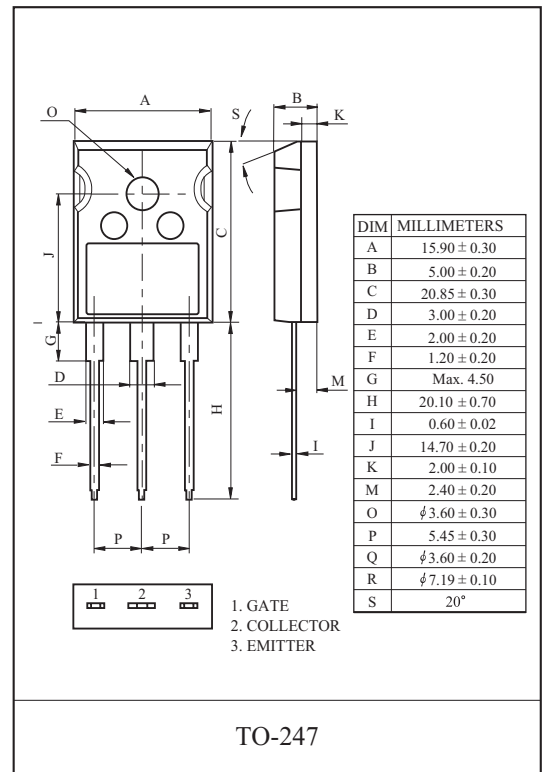


General Description

KEC Reverse conducting IGBTs offer low switching losses, high energy efficiency for soft switching application such as IH(induction heating), microwave oven etc.

FEATURES

- High speed switching
- Soft current turn-off waveforms



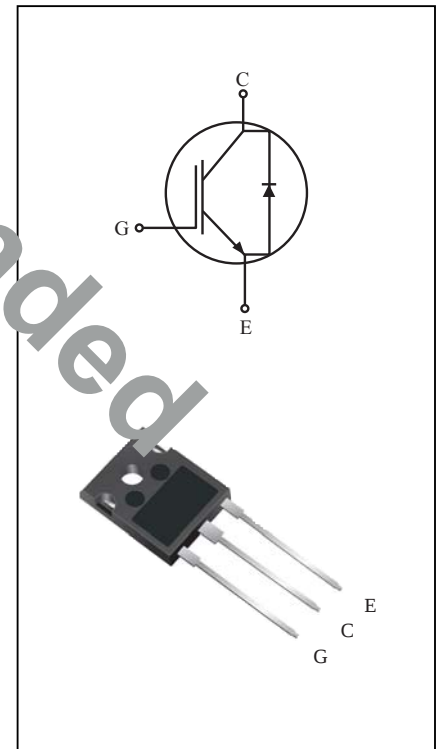
MAXIMUM RATING (Ta=25 °C)

CHARACTERISTIC		SYMBOL	MAX. RATING	UNIT
Collector-Emitter Voltage		V_{CES}	1350	V
Gate-Emitter Voltage		V_{GE}	± 20	V
Collector Current	@T _C =25	I_C	60	A
	@T _C =100		30	A
Pulsed Collector Current		I_{CM}^*	90	A
Diode Continuous Forward Current	@T _C =100	I_F	30	A
Diode Maximum Forward Current		I_{FM}	90	A
Maximum Power Dissipation	@T _C =25	P_D	378	W
	@T _C =100		187	W
Maximum Junction Temperature		T_j	175	°C
Storage Temperature Range		T_{stg}	-55 to + 150	°C

*Repetitive rating : Pulse width limited by max. junction temperature

THERMAL CHARACTERISTIC

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Junction to Case (IGBT)	R_{thJC}	0.4	/W
Thermal Resistance, Junction to Case (DIODE)	R_{thJC}	0.4	/W
Thermal Resistance, Junction to Ambient	R_{thJA}	40	/W



KGF30N135KRH

ELECTRICAL CHARACTERISTICS (Ta=25)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static						
Collector-Emitter Breakdown Voltage	BV _{CES}	V _{GE} =0V, I _C =1.0mA	1350	-	-	V
Collector Cut-off Current	I _{CES}	V _{GE} =0V, V _{CE} =1350V	-	-	1	mA
Gate Leakage Current	I _{GES}	V _{CE} =0V, V _{GE} = ± 20V	-	-	± 100	nA
Gate Threshold Voltage	V _{GE(th)}	V _{GE} =V _{CE} , I _C =20mA	4.7	5.9	7.1	V
Collector-Emitter Saturation Voltage	V _{CE(sat)}	V _{GE} =15V, I _C =30A	-	1.73	2.1	V
		V _{GE} =15V, I _C =30A, T _C = 150	-	1.86	-	V
		V _{GE} =15V, I _C =60A	-	2.18	-	V
Diode Forward Voltage	V _F	I _F = 30A	-	2.07	2.5	V
		I _F = 30A, T _C = 150	-	2.6	-	V
Dynamic						
Total Gate Charge	Q _g	V _{CC} =600V, V _{GE} =15V, I _C = 30A	-	180	-	nC
Gate-Emitter Charge	Q _{ge}		-	27	-	nC
Gate-Collector Charge	Q _{gc}		-	95	-	nC
Turn-Off Delay Time	t _{d(off)}	V _{CC} =600V, I _C =30A, V _{GE} =15V,R _G =10Ω Resistive Load, T _C = 25	-	225	-	ns
Fall Time	t _f		-	181	-	ns
Turn-Off Switching Loss	E _{off}		-	0.8	-	mJ
Turn-Off Delay Time	t _{d(off)}	V _{CC} =600V, I _C =30A, V _{GE} =15V, R _G =10Ω Resistive Load, T _C = 150	-	260	-	ns
Fall Time	t _f		-	516	-	ns
Turn-Off Switching Loss	E _{off}		-	2.2	-	mJ
Input Capacitance	C _{ies}	V _{CE} =30V, V _{GE} =0V, f=1MHz	-	3941	-	pF
Ouput Capacitance	C _{oes}		-	92	-	pF
Reverse Transfer Capacitance	C _{res}		-	39	-	pF

Marking

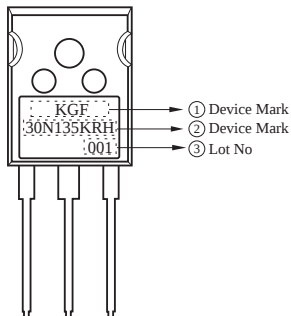


Fig 1. Saturation Voltage Characteristics

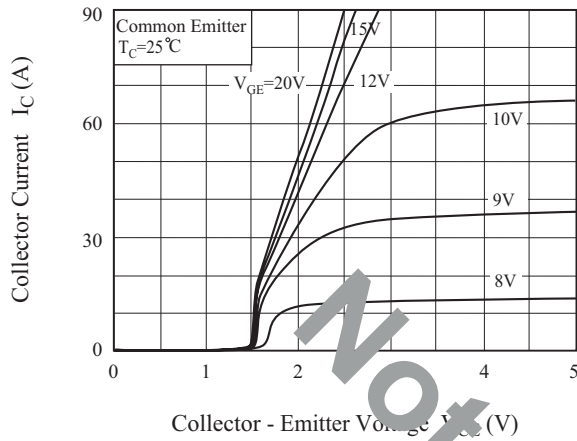


Fig 2. Saturation Voltage Characteristics

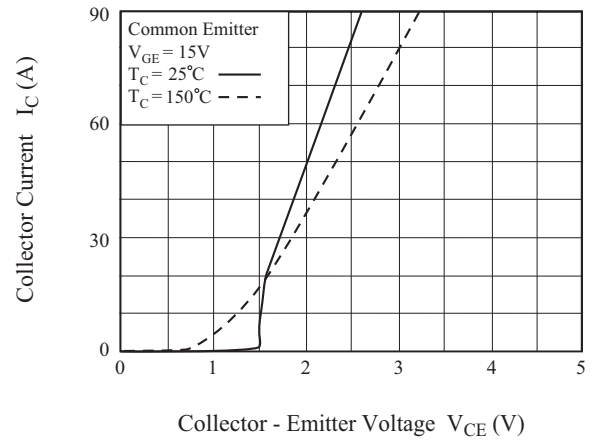


Fig 3. Saturation Voltage vs. Case Temperature

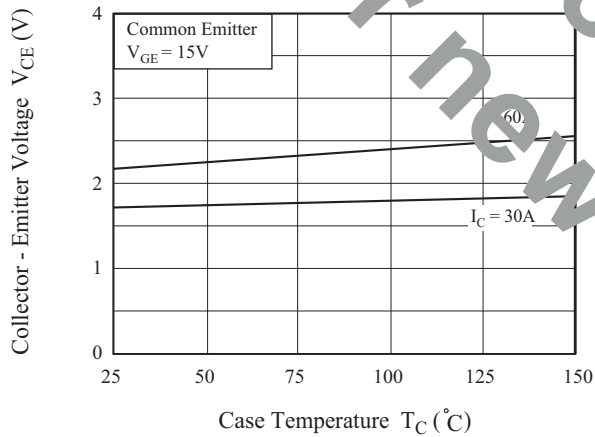


Fig 4. Saturation Voltage vs. V_{GE}

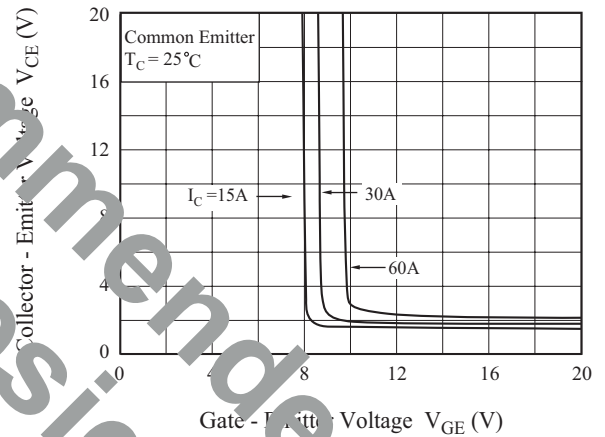


Fig 5. Saturation Voltage vs. V_{GE}

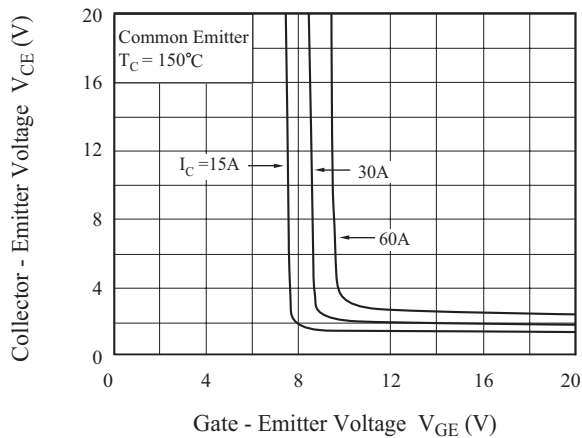


Fig 6. Capacitance Characteristics

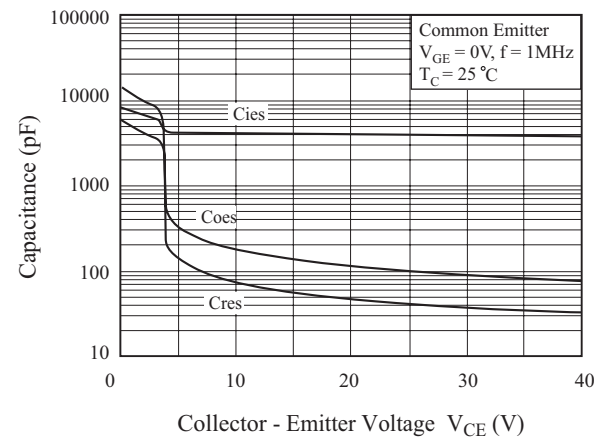


Fig 7. Turn-Off Characteristics vs. Gate Resistance

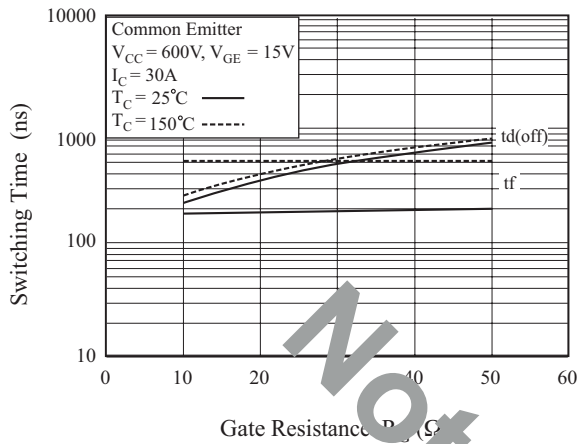


Fig 8. Switching Loss vs. Gate Resistance

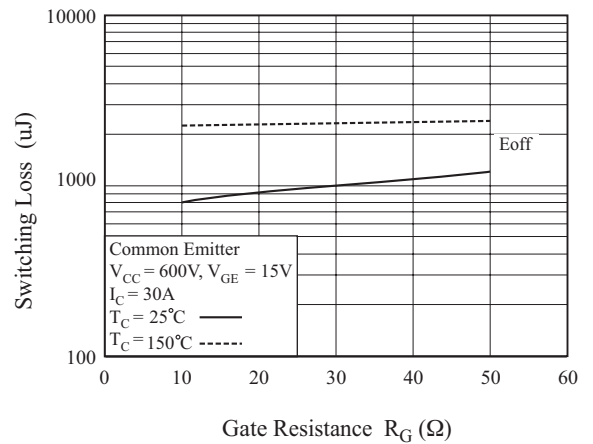


Fig 9. Turn-Off Characteristics vs. Collector Current

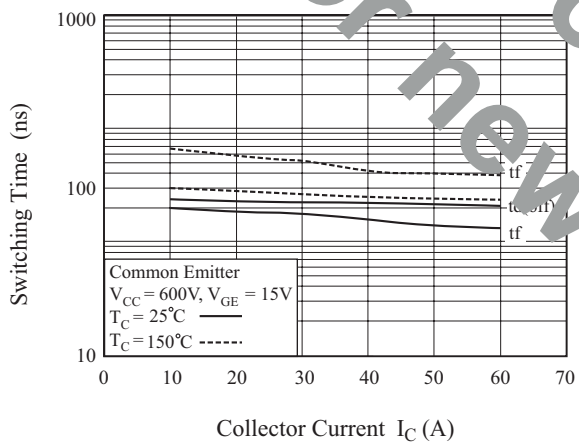


Fig 10. Switching Loss vs. Collector Current

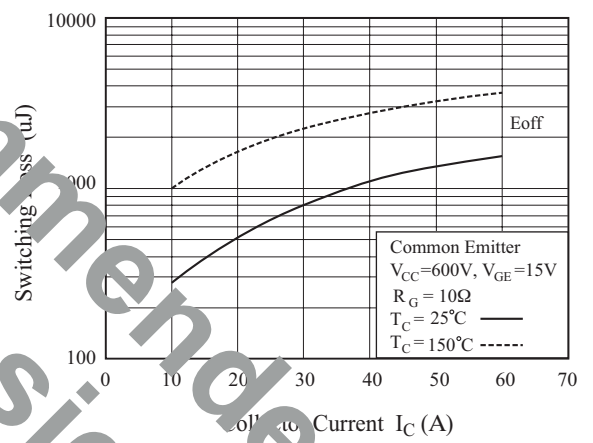


Fig 11. Gate Charge Characteristics

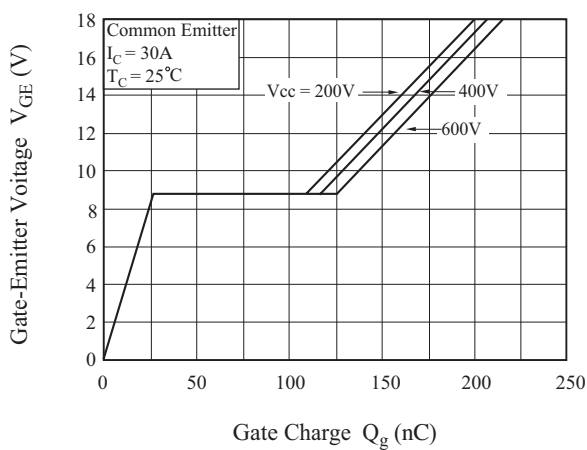


Fig 12. Forward Characteristics

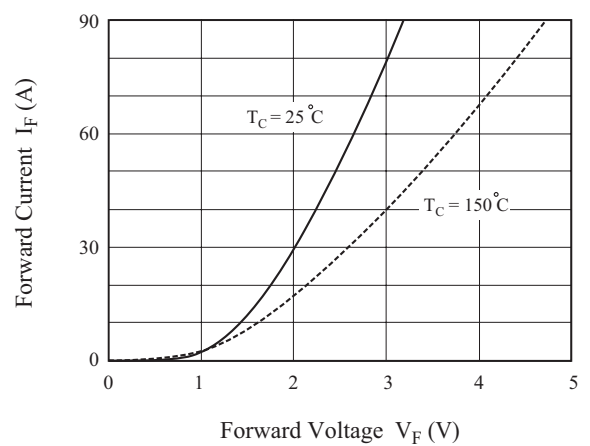


Fig 13. SOA Characteristics

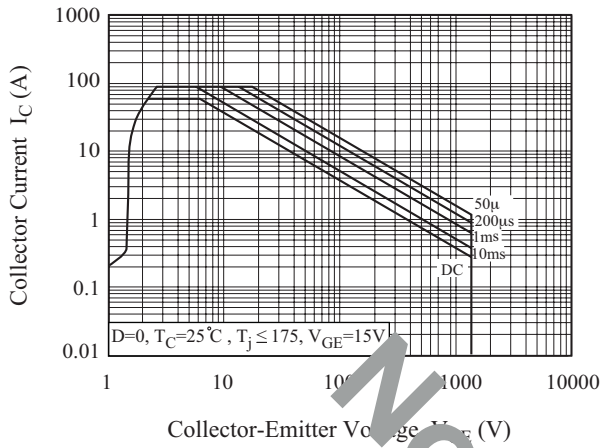


Fig 14. Transient Thermal Impedance of IGBT

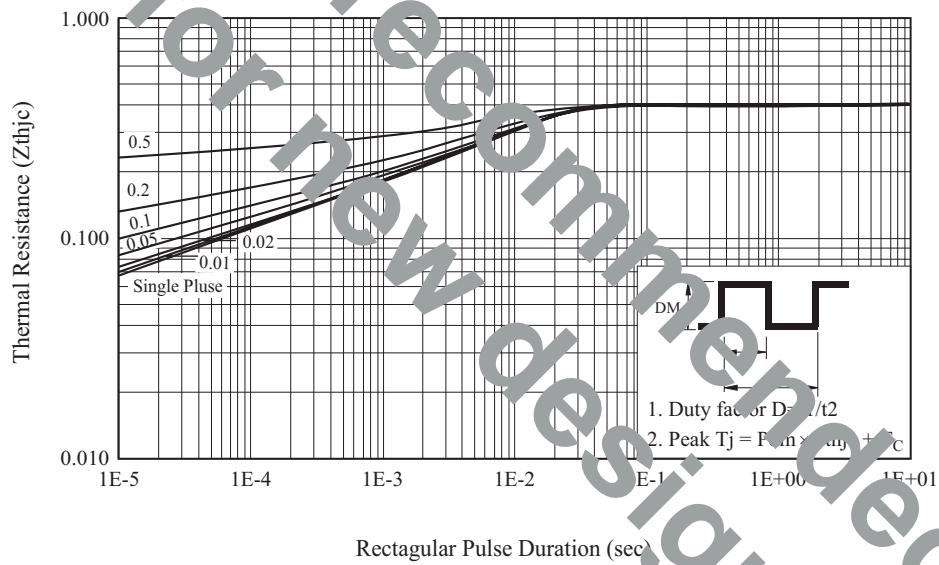


Fig 15. Switching Test Circuit

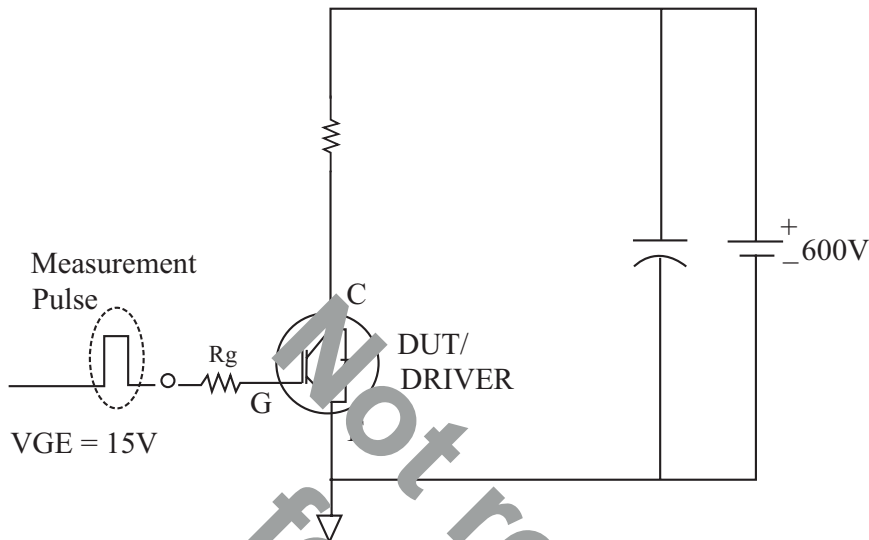


Fig 16. Definition Switching Time & Loss

