



Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272

KD621K20
Dual Darlington Transistor Module
 200 Amperes/1000 Volts

Absolute Maximum Ratings, $T_J = 25\text{ }^\circ\text{C}$ unless otherwise specified

Ratings	Symbol	KD621K20	Units
Junction Temperature	T_J	-40 to 150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 to 125	$^\circ\text{C}$
Collector-Emitter Sustaining Voltage, $V_{BE} = -2\text{V}$	$V_{CEV(sus)}$	1000	Volts
Collector-Base Voltage	V_{CBO}	1000	Volts
Emitter-Base Voltage	V_{EBO}	7	Volts
Collector-Emitter Voltage, $V_{BE} = -2\text{V}$	V_{CEV}	1000	Volts
Continuous Collector Current	I_C	200	Amperes
Diode Forward Current	I_{FM}	200	Amperes
Continuous Base Current	I_B	10	Amperes
Diode Surge Current	I_{FSM}	2000	Amperes
Power Dissipation (Each Transistor)	P_t	1560	Watts
Max. Mounting Torque M6 Terminal Screws	—	26	in.-lb.
Max. Mounting Torque M6 Mounting Screws	—	265	in.-lb.
Module Weight (Typical)	—	870	Grams
V Isolation	V_{RMS}	2500	Volts

Electrical Characteristics, $T_J = 25\text{ }^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Collector Cutoff Current	I_{CEV}	$V_{CE} = 1000\text{V}, V_{BE} = -2\text{V}$	—	—	4	mA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 7\text{V}$	—	—	800	mA
DC Current Gain	h_{FE}	$I_C = 200\text{A}, V_{CE} = 2.8\text{V}$	75	—	—	—
		$I_C = 200\text{A}, V_{CE} = 5.0\text{V}$	100	—	—	—
Diode Forward Voltage	V_{FM}	$I_{FM} = 200\text{A}$	—	—	1.8	Volts
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 200\text{A}, I_B = 4\text{A}$	—	—	2.5	Volts
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 200\text{A}, I_B = 4\text{A}$	—	—	3.5	Volts
Resistive	Turn-on	t_{on}	—	—	3.0	μs
Load	Storage Time	t_s	—	—	15	μs
Switch Times	Fall Time	t_f	—	—	3.0	μs

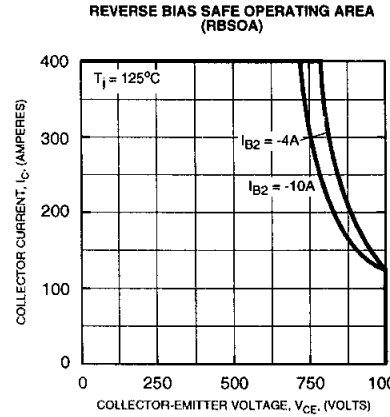
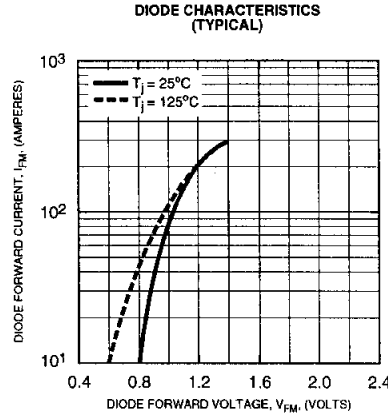
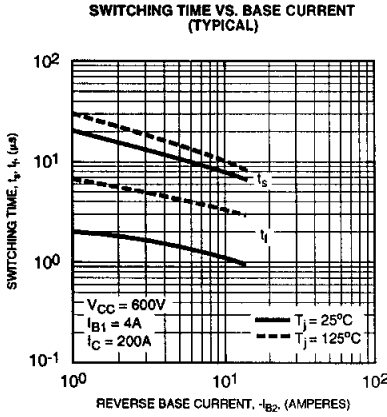
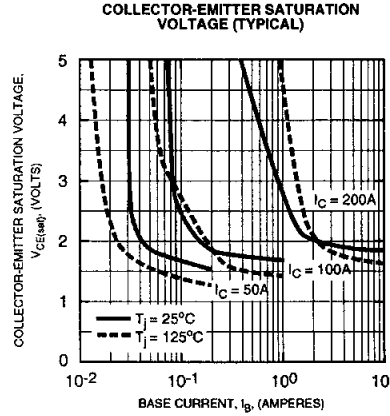
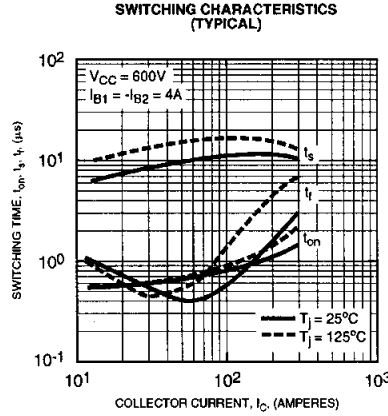
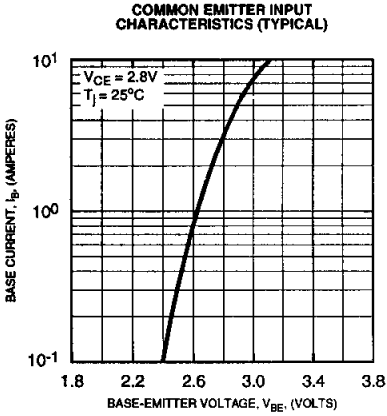
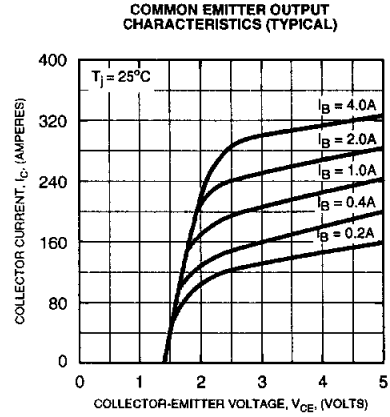
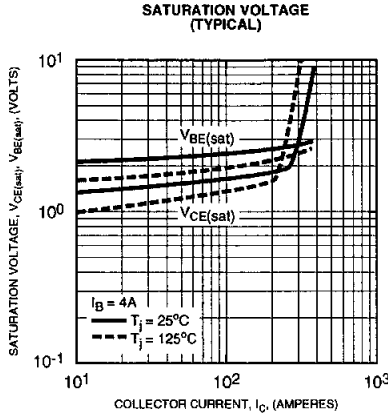
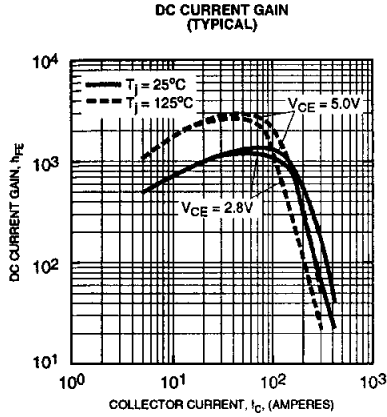
Thermal and Mechanical Characteristics, $T_J = 25\text{ }^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction-to-Case	$R_{\theta(j-c)}$	Transistor Part	—	—	0.08	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta(j-c)}$	Diode Part	—	—	0.35	$^\circ\text{C/W}$



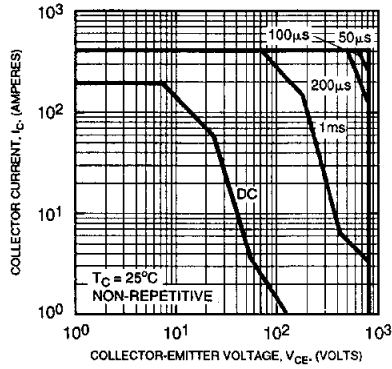
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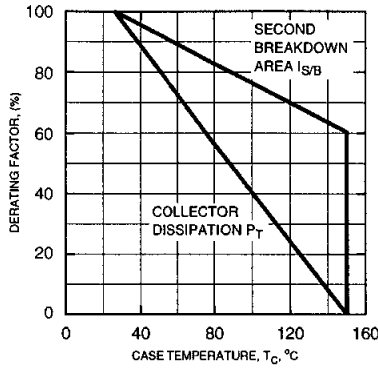


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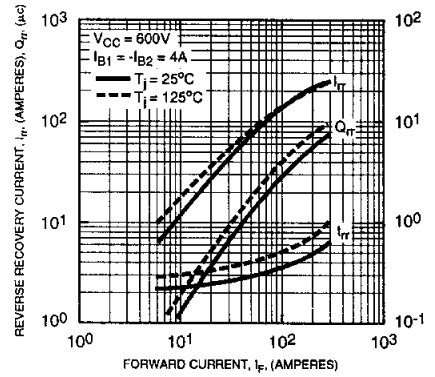
FORWARD BIAS SAFE OPERATING AREA (SOA)



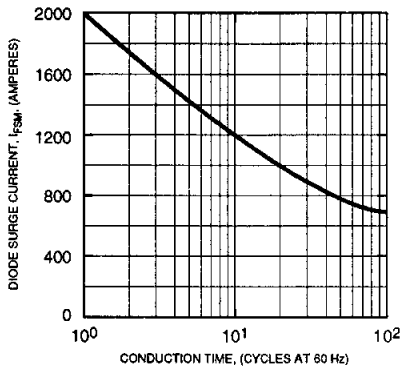
DERATING FACTOR OF SAFE OPERATING AREA (SOA)



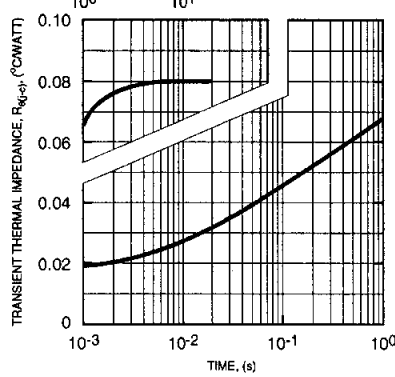
REVERSE RECOVERY CHARACTERISTICS OF FREE-WHEEL DIODE (TYPICAL)



DIODE FORWARD SURGE CURRENT



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (TRANSISTOR)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (DIODE)

