

PTB 20193

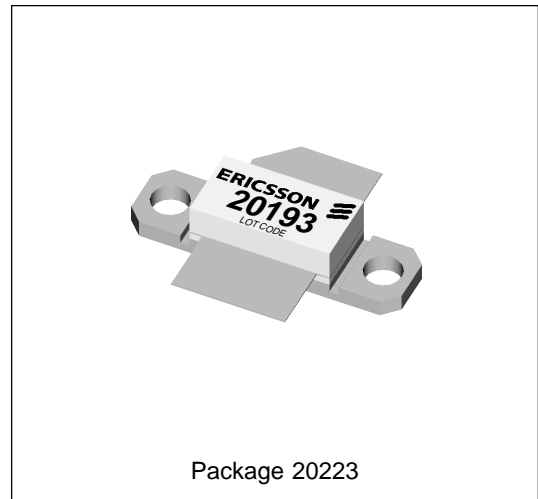
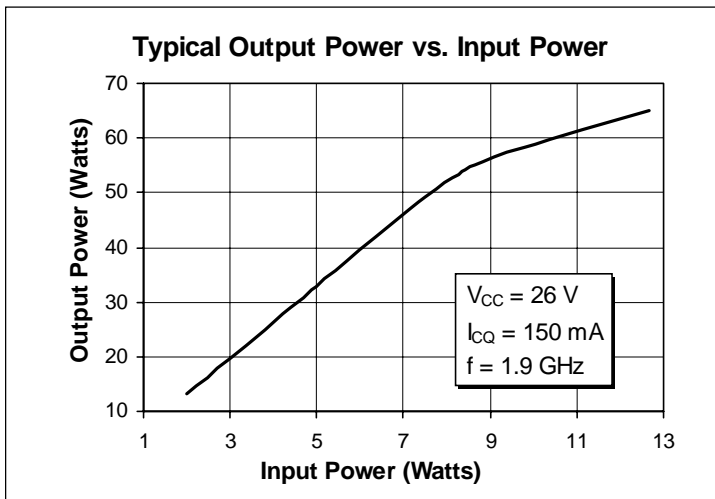
60 Watts, 1.8–1.9 GHz

Cellular Radio RF Power Transistor

Description

The 20193 is a class AB, NPN common emitter RF power transistor intended for 26 Vdc operation from 1.8 to 1.9 GHz. It is rated at 60 watts minimum output power and may be used for both CW and PEP applications. Ion implantation, nitride surface passivation and gold metallization are used to ensure excellent device reliability. 100% lot traceability is standard.

- 60 Watts, 1.8–1.9 GHz
- Class AB Characteristics
- Gold Metallization
- Silicon Nitride Passivated



Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CER}	55	Vdc
Collector-Emitter Voltage	V_{CES}	55	Vdc
Emitter-Base Voltage (collector open)	V_{EBO}	4.0	Vdc
Collector Current (continuous)	I_C	8	Adc
Total Device Dissipation at $T_{flange} = 25^\circ C$	P_D	233	W
Above $25^\circ C$ derate by		1.33	W/ $^\circ C$
Storage Temperature Range	T_{STG}	-40 to +150	$^\circ C$
Thermal Resistance ($T_{flange} = 70^\circ C$)	$R_{\theta JC}$	0.75	$^\circ C/W$

Electrical Characteristics (100% Tested)

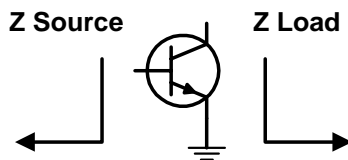
Characteristics	Conditions	Symbol	Min	Typ	Max	Units
Breakdown Voltage C to E	$I_B = 0\text{ A}, I_C = 60\text{ mA}, R_{BE} = 27\ \Omega$	$V_{(BR)CER}$	55	—	—	Volts
Breakdown Voltage C to E	$V_{BE} = 0\text{ V}, I_C = 60\text{ mA}$	$V_{(BR)CES}$	55	—	—	Volts
Breakdown Voltage E to B	$I_C = 0\text{ V}, I_E = 25\text{ mA}$	$V_{(BR)EBO}$	4	5	—	Volts
DC Current Gain	$V_{CE} = 5\text{ V}, I_C = 300\text{ mA}$	H_{fe}	20	50	120	—

RF Specifications (100% Tested)

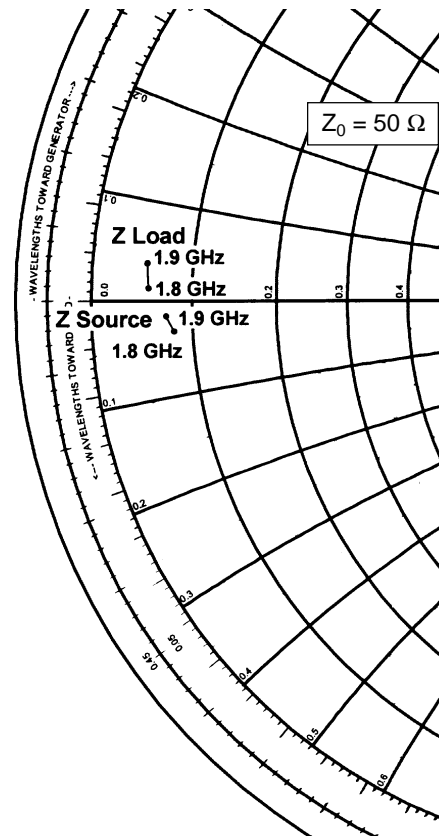
Characteristics	Symbol	Min	Typ	Max	Units
Gain ($V_{CC} = 26\text{ Vdc}, P_{out} = 15\text{ W}, I_{CQ} = 150\text{ mA}, f = 1.9\text{ GHz}$)	G_{pe}	8.0	8.5	—	dB
Power Output at 1 dB Compression ($V_{CC} = 26\text{ Vdc}, I_{CQ} = 150\text{ mA}, f = 1.9\text{ GHz}$)	P-1dB	60	—	—	Watts
Collector Efficiency ($V_{CC} = 26\text{ Vdc}, P_{out} = 60\text{ W}, I_{CQ} = 150\text{ mA}, f = 1.9\text{ GHz}$)	η_C	43	—	—	%
Load Mismatch Tolerance ($V_{CC} = 26\text{ Vdc}, P_{out} = 30\text{ W}, I_{CQ} = 150\text{ mA}, f = 1.9\text{ GHz}$ —all phase angles at frequency of test)	Ψ	—	—	5:1	—

Impedance Data (data shown for fixed-tuned broadband circuit)

($V_{CC} = 26\text{ Vdc}, P_{out} = 60\text{ W}, I_{CQ} = 150\text{ mA}$)



Frequency GHz	Z Source		Z Load	
	R	jX	R	jX
1.80	4.0	-1.6	2.7	0.65
1.90	3.6	-0.08	2.6	1.90



Typical Performance

