MPSA43 / MMBTA43



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DFF CHARACTERISTICS /deR/CBO Collector-Emitter Breakdown Voltage I_c = 1.0 mA, I_g = 0 200 V /deR/CBO Collector-Base Breakdown Voltage I_c = 100 µA, I_c = 0 6.0 V /deR/CBO Collector-Cutoff Current VCB = 160 V, I_c = 0 6.0 V CBO Collector-Cutoff Current VCB = 160 V, I_c = 0 0.1 µA CBO Emitter-Cutoff Current VCB = 4.0 V, I_C = 0 0.1 µA CBO Emitter-Cutoff Current VCB = 4.0 V, I_C = 10 V 25 0 0 VPE DC Current Gain I_C = 1.0 mA, VCE = 10 V 20 0 0 VEE DC Current Gain I_C = 20 mA, I_B = 2.0 mA 0.4 V VGE(sat) Collector-Emitter Saturation Voltage I_C = 20 mA, I_B = 2.0 mA 0.9 V SMALL SIGNAL CHARACTERISTICS T Current Gain - Bandwidth Product I_C = 10 mA, VCE = 20 V, I_E = 0, f = 1.0 MHz 4.0 pF Col Collector-Base Capacitance VCB = 20 V, I_E = 0, f = 1.0 MHz 4.0 pF <	OFF CHARACTERISTICS V _{(BR)CEO} Collector-Emitter Breakdown Voltage I _c = 1.0 mA, I _B = 0 200 1 V _{(BR)EBO} Collector-Base Breakdown Voltage I _c = 100 µA, I _c = 0 6.0 0 V _{(BR)EBO} Emitter-Base Breakdown Voltage I _e = 100 µA, I _c = 0 6.0 0 V _{(BB)EBO} Emitter-Cutoff Current V _{CB} = 160 V, I _E = 0 0.1 0 ON CHARACTERISTICS* NFE DC Current Gain I _c = 1.0 mA, V _{CE} = 10 V 25 0 0 V _{CE(Sat)} Collector-Emitter Saturation Voltage I _c = 20 mA, I _b = 2.0 mA 0.4 0.4 V _{EE(Sat)} Base-Emitter Saturation Voltage I _c = 10 mA, V _{CE} = 10 V 25 0 0.4 V _{BE(Sat)} Base-Emitter Saturation Voltage I _c = 20 mA, I _b = 2.0 mA 0.4 0.9	Symbol	Parameter	Test Conditions	Min	Max	Units
Collector-Entitlet Breakdown Voltage* I _C = 1.0 mA, I _B = 0 200 V V(BR/CEO Collector-Emitter Breakdown Voltage I _C = 100 µA, I _E = 0 200 V V(BR/CEO Collector-Emitter Base Breakdown Voltage I _L = 100 µA, I _E = 0 200 V V(BR/CEO Collector-Emitter Base Breakdown Voltage I _L = 100 µA, I _C = 0 6.0 V CBO Collector-Cutoff Current V _{CB} = 160 V, I _E = 0 0.1 µA EBO Emitter-Cutoff Current V _{CB} = 160 V, I _C = 0 0.1 µA DN CHARACTERISTICS* DC Current Gain I _C = 1.0 mA, V _{CE} = 10 V 25 200 V _{EE} DC Current Gain I _C = 1.0 mA, V _{CE} = 10 V 40 200 200 Cellsati Collector-Emitter Saturation Voltage I _C = 20 mA, I _B = 2.0 mA 0.4 V V _{BE(Sat)} Base-Emitter Saturation Voltage I _C = 20 mA, I _B = 2.0 mA 0.9 V SMALL SIGNAL CHARACTERISTICS T Current Gain - Bandwidth Product I _C = 10 mA, V _{CE} = 20 V, I _E = 0, f = 1.0 MHz 4.0 pF *Pulse Test: Pulse Width £ 300 ms, Duty Cycle £ 2.0% State = 0, f = 1.0 MHz 4.0	$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$		RACTERISTICS				
(Interce) Collector-Base Breakdown Voltage Ic 100 μA, Ig 0 200 V (Interce) Collector-Base Breakdown Voltage Ig 100 μA, Ig 0 200 V (Interce) Emitter-Base Breakdown Voltage Ig 100 μA, Ig 0 6.0 V Cac Collector-Cutoff Current V _{CB} = 160 V, Ig 0 0.1 μA EBO Emitter-Cutoff Current V _{CB} = 10 M, V _{CE} = 0 0.1 μA CDN CHARACTERISTICS* Ic 10 mA, V _{CE} = 10 V 40 10 25 200 V VIEW DC Current Gain Ic 10 mA, V _{CE} = 10 V 40 10 23 mA, V _{CE} = 10 V 40 10 23 mA, V _{CE} = 10 V 40 10 200 10 10 10 200 10	$\begin{tabular}{ lambda la$		Collector-Emitter Breakdown Voltage*	$l_{c} = 1.0 \text{ mA}$, $l_{B} = 0$	200		V
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	(BR)CEO	Collector-Base Breakdown Voltage	$I_{c} = 100 \text{ µA}, I_{c} = 0$	200		V
Collector-Cutoff Current V _{CB} 160 V, I _E = 0 0.1 μA DBC Emitter-Cutoff Current V _{EB} 4.0 V, I _C = 0 0.1 μA DN CHARACTERISTICS* IC = 1.0 mA, V _{CE} = 10 V 25 IC IC 10 mA, V _{CE} = 10 V 40 IC 200 IC 10 mA, V _{CE} = 10 V 40 IC 200 IC 200 mA, Ig = 2.0 mA 0.4 V V 30 mA, V _{CE} = 10 V 50 200 IC 200 mA, Ig = 2.0 mA 0.4 V 30	Collector-Cutoff Current V _{CB} = 160 V, I _E = 0 0.1 BBO Emitter-Cutoff Current V _{EB} = 4.0 V, I _E = 0 0.1 ON CHARACTERISTICS* Ic 10 mA, V _{CE} = 10 V 25 d0 0.1 ON CHARACTERISTICS* Ic 10 mA, V _{CE} = 10 V 25 d0 0.1 Celeating Ic 10 mA, V _{CE} = 10 V 25 d0 10 mA, V _{CE} = 10 V 25 d0 10 mA, V _{CE} = 10 V 10 mA, V _{CE} = 20 mA, I _B = 2.0 mA 0.4 10 mA, V _{CE} = 20 mA, I _B = 2.0 mA 0.4 10 mA, V _{CE} = 10 V 10 mA, V _{CE} = 20 mA, I _B = 2.0 mA 0.4 10 mA, V _{CE} = 20 V, I _E = 0, I = 10 mA, V _{CE} = 20 V, I _E = 0, I = 10 mA, V _{CE} = 20 V, I _E = 0, I = 1.0 mHz 4.0 * Pulse Test: Pulse Width £ 300 ms, Duty Cycle £ 2.0%	(BR)EBO	Emitter-Base Breakdown Voltage	$I_{\rm E} = 100 \mu\text{A}, I_{\rm C} = 0$	6.0		V
Bit Emitter-Cutoff Current VEB = 4.0 V, IC = 0 0.1 μA ON CHARACTERISTICS* FE DC Current Gain IC = 1.0 mA, VCE = 10 V 25 40 200 Ce(sal) Collector-Emitter Saturation Voltage IC = 20 mA, IB = 2.0 mA 0.4 V Secart Base-Emitter Saturation Voltage IC = 20 mA, IB = 2.0 mA 0.9 V SMALL SIGNAL CHARACTERISTICS - Current Gain - Bandwidth Product IC = 10 mA, VCE = 20 V, IS = 0, F = 1.0 MHz 4.0 pF * cb Collector-Base Capacitance VCB = 20 V, IE = 0, F = 1.0 MHz 4.0 pF * Pulse Test: Pulse Width £ 300 ms, Duty Cycle £ 2.0% - - - - 4.0 pF	Obs Obs <thobs< th=""> <thobs< th=""> <thobs< th=""></thobs<></thobs<></thobs<>	(BR)200	Collector-Cutoff Current	$V_{CB} = 160 \text{ V}, \text{ I}_{\text{E}} = 0$		0.1	μA
DN CHARACTERISTICS* FE DC Current Gain Ic = 1.0 mA, VcE = 10 V 25 Ic = 30 mA, VcE = 10 V 40 1c = 30 mA, VcE = 10 V 40 Ic = 30 mA, VcE = 10 V 50 200 200 CcE(sat) Collector-Emitter Saturation Voltage Ic = 20 mA, Ig = 2.0 mA 0.4 V BE(sat) Base-Emitter Saturation Voltage Ic = 20 mA, Ig = 2.0 mA 0.9 V SMALL SIGNAL CHARACTERISTICS Current Gain - Bandwidth Product Ic = 10 mA, VcE = 20 V, fs = 100 MHz 50 MHz iccb Collector-Base Capacitance VcB = 20 V, IE = 0, f = 1.0 MHz 4.0 pF *Pulse Test: Pulse Width £ 300 ms, Duty Cycle £ 2.0%	Display="block">ON CHARACTERISTICS* FE DC Current Gain Ic = 1.0 mA, V_{CE} = 10 V 25 Ic = 10 mA, V_{CE} = 10 V 40 1c = 30 mA, V_{CE} = 10 V 50 200 CcE(sat) Collector-Emitter Saturation Voltage Ic = 20 mA, I_B = 2.0 mA 0.4 0.4 beE(sat) Base-Emitter Saturation Voltage Ic = 20 mA, I_B = 2.0 mA 0.9 0.9 CMALL SIGNAL CHARACTERISTICS Current Gain - Bandwidth Product Ic = 10 mA, V_{CE} = 20 V, f = 100 MHz 50 f = 100 MHz Collector-Base Capacitance V_{CB} = 20 V, I_E = 0, f = 1.0 MHz 4.0 4.0 *Pulse Test: Pulse Width £ 300 ms, Duty Cycle £ 2.0%	BO	Emitter-Cutoff Current	$V_{EB} = 4.0 \text{ V}, I_{C} = 0$		0.1	μA
DN CHARACTERISTICS* FE DC Current Gain I _c = 1.0 mA, V _{CE} = 10 V 25 40 I _c = 10 mA, V _{CE} = 10 V 50 200 Cessal Collector-Emitter Saturation Voltage I _c = 20 mA, I _B = 2.0 mA 0.4 V Base-Emitter Saturation Voltage I _c = 20 mA, I _B = 2.0 mA 0.4 V SMALL SIGNAL CHARACTERISTICS Current Gain - Bandwidth Product I _c = 10 mA, V _{CE} = 20 V, fermitter Saturation Voltage I _c = 10 mA, V _{CE} = 20 V, fermitter Saturation Voltage Collector-Base Capacitance V _{CB} = 20 V, I _E = 0, f = 1.0 MHz 4.0 pF *Pulse Test: Pulse Width £ 300 ms, Duty Cycle £ 2.0% State Saturation Saturat	ON CHARACTERISTICS* FE DC Current Gain I _c = 1.0 mA, V _{CE} = 10 V 25 40 20 10 = 30 mA, V _{CE} = 10 V 50 200 200 10 = 30 mA, V _{CE} = 10 V 50 200 10 = 30 mA, V _{CE} = 10 V 50 200 10 = 30 mA, V _{CE} = 10 V 50 200 10 10 = 30 mA, V _{CE} = 10 V 50 200 10 10 = 30 mA, V _{CE} = 10 V 50 200 10 <th10< th=""> 10 10</th10<>	50					
FE DC Current Gain I _c = 1.0 mA, V _{CE} = 10 V 25 40 I _c = 30 mA, V _{CE} = 10 V 50 200 V _{CE(Sat)} Collector-Emitter Saturation Voltage I _c = 20 mA, I _b = 2.0 mA 0.4 V V _{EE(Sat)} Base-Emitter Saturation Voltage I _c = 20 mA, I _b = 2.0 mA 0.4 V SMALL SIGNAL CHARACTERISTICS I _c = 10 mA, V _{CE} = 20 V, I _b = 2.0 v, f = 1.0 MHz 0.9 V Current Gain - Bandwidth Product I _c = 10 mA, V _{CE} = 20 V, I _b = 0, f = 1.0 MHz 4.0 pF i _{cb} Collector-Base Capacitance V _{CB} = 20 V, I _E = 0, f = 1.0 MHz 4.0 pF *Pulse Test: Pulse Width £ 300 ms, Duty Cycle £ 2.0%	FE DC Current Gain I _C = 1.0 mA, V _{CE} = 10 V 25 40 I _C = 10 mA, V _{CE} = 10 V 40 1 _C = 30 mA, V _{CE} = 10 V 50 200 GE(sat) Collector-Emitter Saturation Voltage I _C = 20 mA, I _B = 2.0 mA 0.4 0.4 Base-Emitter Saturation Voltage I _C = 20 mA, I _B = 2.0 mA 0.9 0.9 GMALL SIGNAL CHARACTERISTICS Current Gain - Bandwidth Product I _C = 10 mA, V _{CE} = 20 V, I _B = 2.0 V, f = 100 MHz 50 Current Gain - Bandwidth Product I _C = 10 mA, V _{CE} = 20 V, f = 1.0 MHz 4.0 10 Grade Collector-Base Capacitance V _{CB} = 20 V, I _E = 0, f = 1.0 MHz 4.0 *Pulse Test: Pulse Width £ 300 ms, Duty Cycle £ 2.0%)N CHAR	ACTERISTICS*		1	1	
Ic = 10 IIA, VCE = 10 V 40 Ic = 30 mA, VCE = 10 V 50 200 $V_{CE(gat)}$ 0.4 V MALL SIGNAL CHARACTERISTICS r Current Gain - Bandwidth Product Ic = 10 mA, VcE = 20 V, f = 100 MHz Scb Collector-Base Capacitance VCB = 20 V, IE = 0, f = 1.0 MHz * Pulse Test: Pulse Width £ 300 ms, Duty Cycle £ 2.0%	Ic = 10 IIIA, VCE = 10 V 40 Ic = 30 mA, VCE = 10 V 50 200 VCE(sat) Collector-Emitter Saturation Voltage Ic = 20 mA, I _B = 2.0 mA 0.4 VBE(sat) Base-Emitter Saturation Voltage Ic = 20 mA, I _B = 2.0 mA 0.9 SMALL SIGNAL CHARACTERISTICS r Current Gain - Bandwidth Product Ic = 10 mA, VcE = 20 V, f = 100 MHz 50 cb Collector-Base Capacitance VCB = 20 V, IE = 0, f = 1.0 MHz 4.0 *Pulse Test: Pulse Width £ 300 ms, Duty Cycle £ 2.0% X X	FE	DC Current Gain	$I_{c} = 1.0 \text{ mA}, V_{ce} = 10 \text{ V}$	25 40		
Collector-Emitter Saturation Voltage Ic = 20 mA, I _B = 2.0 mA 0.4 V (BE(Sat) Base-Emitter Saturation Voltage Ic = 20 mA, I _B = 2.0 mA 0.9 V SMALL SIGNAL CHARACTERISTICS Ic = 10 mA, V _{CE} = 20 V, I _B = 2.0 mA 0.9 V SMALL SIGNAL CHARACTERISTICS Ic = 10 mA, V _{CE} = 20 V, I _B = 0, f = 1.0 MHz 50 MHz Collector-Base Capacitance V _{CB} = 20 V, I _E = 0, f = 1.0 MHz 4.0 pF *Pulse Test: Pulse Width £ 300 ms, Duty Cycle £ 2.0%	CcE(sat) Collector-Emitter Saturation Voltage I _c = 20 mA, I _B = 2.0 mA 0.4 Base-Emitter Saturation Voltage I _c = 20 mA, I _B = 2.0 mA 0.9 SMALL SIGNAL CHARACTERISTICS r Current Gain - Bandwidth Product I _c = 10 mA, V _{CE} = 20 V, f = 100 MHz Cob Collector-Base Capacitance V _{CB} = 20 V, I _E = 0, f = 1.0 MHz 4.0 *Pulse Test: Pulse Width £ 300 ms, Duty Cycle £ 2.0%			$I_{\rm C} = 30 \text{ mA}, V_{\rm CE} = 10 \text{ V}$ $I_{\rm C} = 30 \text{ mA}, V_{\rm CE} = 10 \text{ V}$	50	200	
Base-Emitter Saturation Voltage I _C = 20 mA, I _B = 2.0 mA 0.9 V SMALL SIGNAL CHARACTERISTICS Current Gain - Bandwidth Product I _C = 10 mA, V _{CE} = 20 V, f = 100 MHz 50 MHz Collector-Base Capacitance V _{CB} = 20 V, I _E = 0, f = 1.0 MHz 4.0 pF *Pulse Test: Pulse Width £ 300 ms, Duty Cycle £ 2.0%	Base-Emitter Saturation Voltage I _C = 20 mA, I _B = 2.0 mA 0.9 SMALL SIGNAL CHARACTERISTICS r Current Gain - Bandwidth Product I _C = 10 mA, V _{CE} = 20 V, f = 100 MHz cb Collector-Base Capacitance V _{CB} = 20 V, I _E = 0, f = 1.0 MHz 4.0 *Pulse Test: Pulse Width £ 300 ms, Duty Cycle £ 2.0%	CE(sat)	Collector-Emitter Saturation Voltage	$I_{\rm C} = 20$ mA, $I_{\rm B} = 2.0$ mA		0.4	V
MALL SIGNAL CHARACTERISTICS Current Gain - Bandwidth Product I _c = 10 mA, V _{CE} = 20 V, 50 MHz f = 100 MHz Collector-Base Capacitance V _{CB} = 20 V, I _E = 0, f = 1.0 MHz 4.0 pF *Pulse Test: Pulse Width £ 300 ms, Duty Cycle £ 2.0%	SMALL SIGNAL CHARACTERISTICS Current Gain - Bandwidth Product I _c = 10 mA, V _{CE} = 20 V, frequence f = 100 MHz Collector-Base Capacitance V _{CB} = 20 V, I _E = 0, f = 1.0 MHz *Pulse Test: Pulse Width £ 300 ms, Duty Cycle £ 2.0%	BE(sat)	Base-Emitter Saturation Voltage	$I_{\rm C} = 20 \text{ mA}, I_{\rm B} = 2.0 \text{ mA}$		0.9	V
Pulse Test: Pulse Width £ 300 ms, Duty Cycle £ 2.0%	Pulse Test: Pulse Width £ 300 ms, Duty Cycle £ 2.0%	*		$v_{CB} = 20 v, r_E = 0, r = 1.0 Wi r_Z$		4.0	р

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