D45C12 (PNP), D44C12 (NPN)

Complementary Silicon Power Transistor

The D45C12 and D44C12 are for general purpose driver or medium power output stages in CW or switching applications.

Features

- Low Collector–Emitter Saturation Voltage 0.5 V (Max)
- High ft for Good Frequency Response
- Low Leakage Current
- Pb-Free Packages are Available*

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	80	Vdc
Collector-Emitter Voltage	VCES	90	Vdc
Emitter Base Voltage	V _{EB}	5.0	Vdc
Collector Current – Continuous Peak (Note 1)	Ι _C	4.0 6.0	Adc
Total Power Dissipation @ $T_C = 25^{\circ}C$ @ $T_A = 25^{\circ}C$	P _D	30 1.67	W W/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	–55 to 150	°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	4.2	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	75	°C/W
Maximum Lead Temperature for Soldering Purposes: 1/8 in from Case for 5 Sec	ΤL	275	°C

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques

1. Pulse Width \leq 6.0 ms, Duty Cycle \leq 50%.



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4.0 AMPERE COMPLEMENTARY SILICON POWER TRANSISTORS 80 VOLTS



MARKING DIAGRAM & PIN ASSIGNMENT



ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

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ELECTRICAL CHARACTERISTICS (T_J = 25° C unless otherwise noted)

Characteristic	Symbol	Min		Max	Unit
DC Current Gain	h _{FE}				_
(V _{CE} = 1.0 Vdc, I _C = 0.2 Adc)		40		120	
$(V_{CE} = 1.0 \text{ Vdc}, I_{C} = 1.0 \text{ Adc})$		20		-	
(V _{CE} = 1.0 Vdc, I _C = 2.0 Adc)		20		-	
ELECTRICAL CHARACTERISTICS (T _C = 25°C unless otherwise noted)					
Characteristic	Symbol	Min	Тур	Max	Unit
OFF CHARACTERISTICS					
Collector Cutoff Current (V_{CE} = Rated V_{CES} , V_{BE} = 0)	I _{CES}	-	-	0.1	μA
Emitter Cutoff Current (V _{EB} = 5.0 Vdc)	I _{EBO}	-	-	10	μA
ON CHARACTERISTICS					
Collector-Emitter Saturation Voltage (I_C = 1.0 Adc, I_B = 50 mAdc)	V _{CE(sat)}	-	0.135	0.5	Vdc

DYNAMIC CHARACTERISTICS						
Base-Emitter Saturation Voltage ($I_C = 1.0 \text{ Adc}$, $I_B = 100 \text{ mAdc}$)	V _{BE(sat)}	-	0.85	1.3	Vdc	
	OL(Sai)					l

Collector Capacitance (V _{CB} = 10 Vdc, f = 1.0 MHz)	C _{cb}	-	125	1	pF
Gain Bandwidth Product (I _C = 20 mA, V_{CE} = 4.0 Vdc, f = 20 MHz)	f _T	-	40	-	MHz

SWITCHING TIMES

Delay and Rise Times (I _C = 1.0 Adc, I _{B1} = 0.1 Adc)	t _d + t _r	-	50	75	ns
Storage Time ($I_C = 1.0 \text{ Adc}, I_{B1} = I_{B2} = 0.1 \text{ Adc}$)	ts	-	350	550	ns
Fall Time (I _C = 1.0 Adc, I _{B1} = I _{B2} = 0.1 Adc)	t _f	-	50	75	ns

ORDERING INFORMATION

Device	Package	Shipping [†]
D45C12	TO-220AB	
D45C12G	TO-220AB (Pb-Free)	50 Units / Rail
D44C12	TO-220AB	50 Onits / Naii
D44C12G	TO-220AB (Pb-Free)	

+For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.



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