

# MOSPEC

## COMPLEMENTARY SILICON POWER TRANSISTORS

...designed for various specific and general purpose application such as; output and driver stages of amplifiers operating at frequencies from DC to greater than 1.0MHz series, shunt and switching regulators; low and high frequency inverters/converters and many others.

### FEATURES:

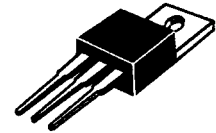
- \* Very Low Collector Saturation Voltage
- \* Excellent Linearity
- \* Fast Switching
- \* PNP Values are Negative, Observe Proper Polarity.

<b>NPN</b>	<b>PNP</b>
<b>D44VM</b>	<b>D45VM</b>
<b>Series</b>	<b>Series</b>

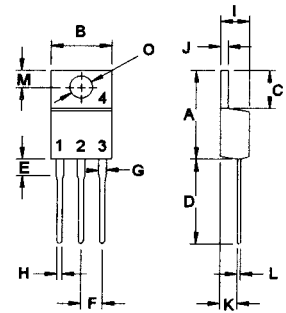
**8 AMPERE  
COMPLEMENTARY SILICON  
POWER TRANSISTORS  
30-80 VOLTS  
50 WATTS**

### MAXIMUM RATINGS

Characteristic	Symbol	D44VM1 D45VM1	D44VM4 D45VM4	D44VM7 D45VM7	D44VM10 D45VM10	Unit
Collector-Emitter Voltage	$V_{CEO}$	30	45	60	80	V
Collector-Emitter Voltage	$V_{CEV}$	50	70	80	100	V
Emitter-Base Voltage	$V_{EBO}$	7.0				V
Collector Current - Continuous Peak	$I_C$ $I_{CM}$	8.0 16				A
Base Current	$I_B$	1.5				A
Total Power Dissipation @ $T_C = 25^\circ C$ Derate above $25^\circ C$	$P_D$	50 0.4				W W/ $^\circ C$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	-55 to +150				$^\circ C$



**TO-220**



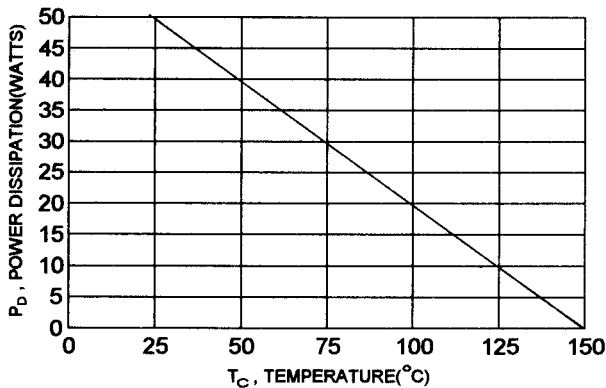
PIN 1.BASE  
2.COLLECTOR  
3.EMITTER  
4.COLLECTOR(CASE)

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta JC}$	2.5	$^\circ C/W$

DIM	MILLIMETERS	
	MIN	MAX
A	14.68	15.31
B	9.78	10.42
C	5.01	6.52
D	13.06	14.62
E	3.57	4.07
F	2.42	3.66
G	1.12	1.36
H	0.72	0.96
I	4.22	4.98
J	1.14	1.38
K	2.20	2.97
L	0.33	0.55
M	2.48	2.98
O	3.70	3.90

**FIGURE -1 POWER DERATING**



D44VM Series NPN / D45VM Series PNP

**ELECTRICAL CHARACTERISTICS** (  $T_c = 25^\circ\text{C}$  unless otherwise noted )

Characteristic	Symbol	Min	Max	Unit
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**OFF CHARACTERISTICS**

Collector-Base Cutoff Current ( $V_{CEV} = \text{Rated Value}$ , $v_{BE(OFF)} = 4.0\text{ V}$ ) ( $V_{CEV} = \text{Rated Value}$ , $v_{BE(OFF)} = 4.0\text{ V}$ , $T_c = 100^\circ\text{C}$ )	$I_{CEV}$		10 100	$\mu\text{A}$
Emitter-Base Cutoff Current ( $V_{BE} = 7.0\text{ V}$ , $I_C = 0$ )	$I_{EBO}$		10	$\mu\text{A}$

**ON CHARACTERISTICS(1)**

DC Current Gain ( $I_C = 4.0\text{ A}$ , $V_{CE} = 1.0\text{ V}$ )  ( $I_C = 6.0\text{ A}$ , $V_{CE} = 1.0\text{ V}$ ) ( $I_C = 8.0\text{ A}$ , $V_{CE} = 1.0\text{ V}$ )	D44VM Series D45VM Series D44VM Series D45VM Series	$h_{FE}$	40 20 20 10	
Collector-Emitter Saturation Voltage ( $I_C = 4.0\text{ A}$ , $I_B = 400\text{ mA}$ ) ( $I_C = 8.0\text{ A}$ , $I_B = 800\text{ mA}$ ) ( $I_C = 8.0\text{ A}$ , $I_B = 800\text{ mA}$ , $T_c = 100^\circ\text{C}$ )		$V_{CE(sat)}$		0.8 1.2 1.5 V
Base-Emitter Saturation Voltage ( $I_C = 8.0\text{ A}$ , $I_B = 800\text{ mA}$ ) ( $I_C = 8.0\text{ A}$ , $I_B = 800\text{ mA}$ , $T_c = 100^\circ\text{C}$ )		$V_{BE(sat)}$		1.5 1.6 V

**DYNAMIC CHARACTERISTICS**

Current-Gain Bandwidth Product (2) ( $I_C = 100\text{ mA}$ , $V_{CE} = 10\text{ V}$ , $f = 1.0\text{ MHz}$ )	$f_T$	30(typ)		MHz
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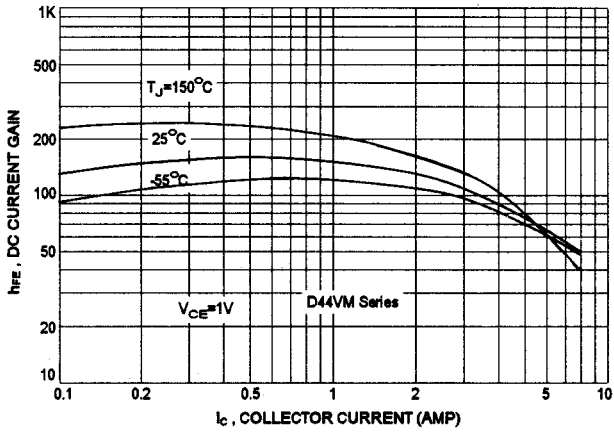
**SWITCHING CHARACTERISTICS**

Rise Time	$V_{CC} = 30\text{V}$ $I_C = 8\text{A}$ , $I_{B1} = -I_{B2} = 800\text{mA}$	D44VM Series	$t_r$		0.5	$\mu\text{s}$
		D45VM Series			0.6	
Storage Time		D44VM Series	$t_s$		1.3	$\mu\text{s}$
	D45VM Series	1.1				
Fall Time		D44VM Series	$t_f$		0.4	$\mu\text{s}$
		D45VM Series			0.5	

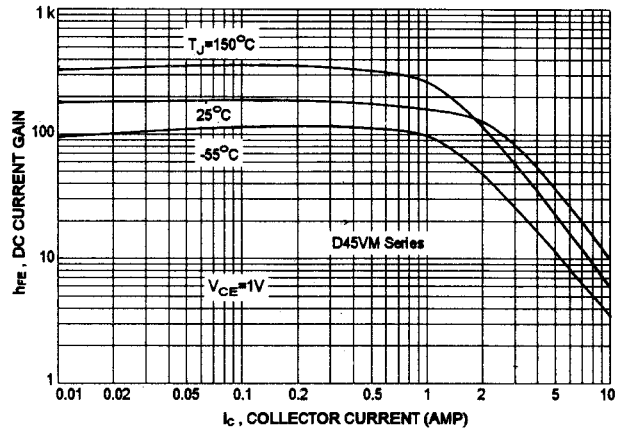
(1) Pulse Test: Pulse width = 300  $\mu\text{s}$  , Duty Cycle  $\leq 2.0\%$

(2)  $f_T = |h_{re}| \cdot f_{sat}$

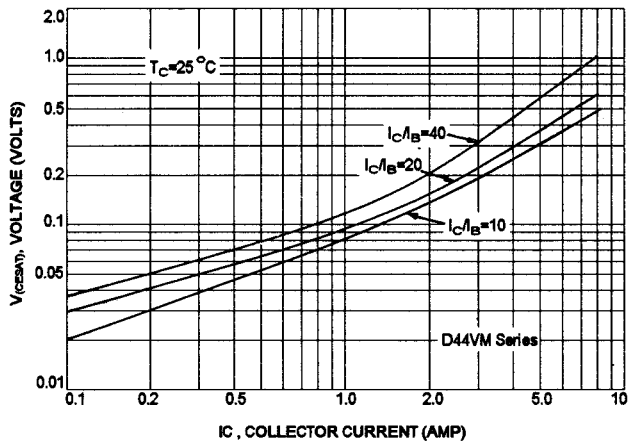
DC CURRENT GAIN



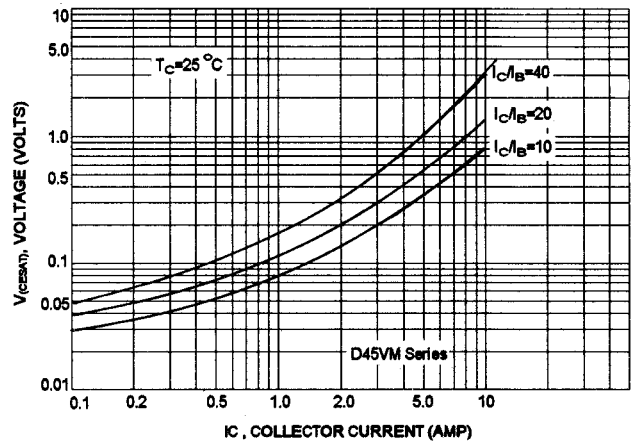
DC CURRENT GAIN



COLLECTOR-EMITTER SATURATION VOLTAGE

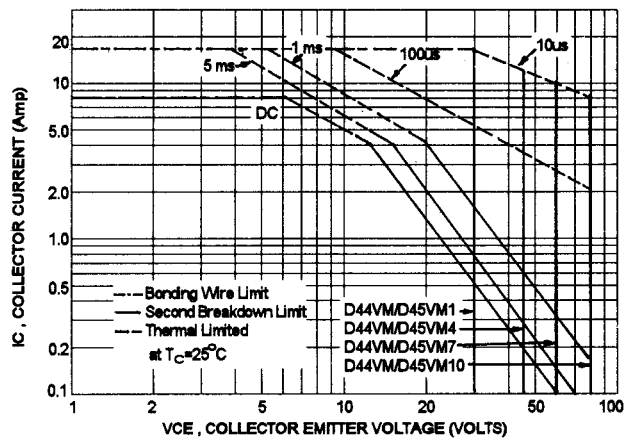


COLLECTOR-EMITTER SATURATION VOLTAGE



D44VM/D45VM

FORWARD-BIAS SAFE OPERATING AREA



D44VM/D45VM

REVERSE-BIAS SAFE OPERATING AREA

