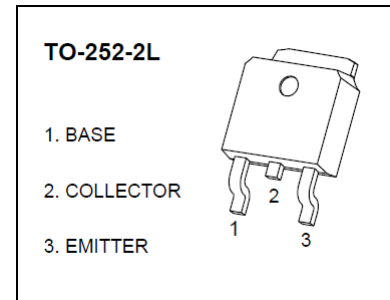


## 2SD1760 Plastic-Encapsulated Transistor

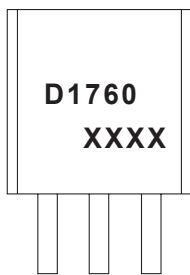
### 2SD1760 Transistor (NPN)

#### FEATURES

- Low  $V_{CE(sat)}$ .  $V_{CE(sat)} = 0.5V$  (Typ.) ( $I_C/I_B = 2A / 0.2A$ )
- AEC-Q101 qualified (Automotive grade with suffix " Q")

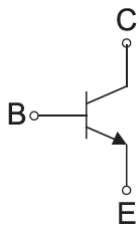


#### MARKING



D1760 = Device code  
XXXX = Date code

#### EQUIVALENT CIRCUIT



**MAXIMUM RATINGS ( $T_j = 25^\circ\text{C}$  unless otherwise specified)**

Parameter	Symbol	Value	Unit
Collector-base voltage	$V_{CBO}$	60	V
Collector-emitter voltage	$V_{CEO}$	50	V
Emitter-base voltage	$V_{EBO}$	5	V
Collector current	$I_C$	3	A
Collector power dissipation	$P_C$	1.5	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}^{1)}$	83.3	$^\circ\text{C/W}$
Thermal Resistance from Junction to Case	$R_{\theta JC}^{2)}$	8.3	$^\circ\text{C/W}$
Operating junction and storage temperature range	$T_j, T_{stg}$	-55 ~ 150	$^\circ\text{C}$

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

Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = 50\mu\text{A}, I_E = 0\text{A}$	60	-	-	V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = 1\text{mA}, I_B = 0\text{A}$	50	-	-	V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = 50\mu\text{A}, I_C = 0\text{A}$	5	-	-	V
Collector-base cut-off current	$I_{CBO}$	$V_{CE} = 40\text{V}, I_E = 0\text{A}$	-	-	1	$\mu\text{A}$
Emitter-base cut-off current	$I_{EBO}$	$V_{EB} = 4\text{V}, I_C = 0\text{A}$	-	-	1	$\mu\text{A}$
DC current gain	$h_{FE(1)}$	$V_{CE} = 3\text{V}, I_C = 500\text{mA}$	82	-	390	-
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 2\text{A}, I_B = 200\text{mA}$	-	-	1	V
Transition frequency	$f_T$	$V_{CE} = 5\text{V}, I_C = 500\text{mA}, f = 30\text{MHz}$	-	90	-	MHz
Collector output capacitance	$C_{ob}$	$V_{CB} = 10\text{V}, I_E = 0\text{A}, f = 1\text{MHz}$	-	40	-	pF

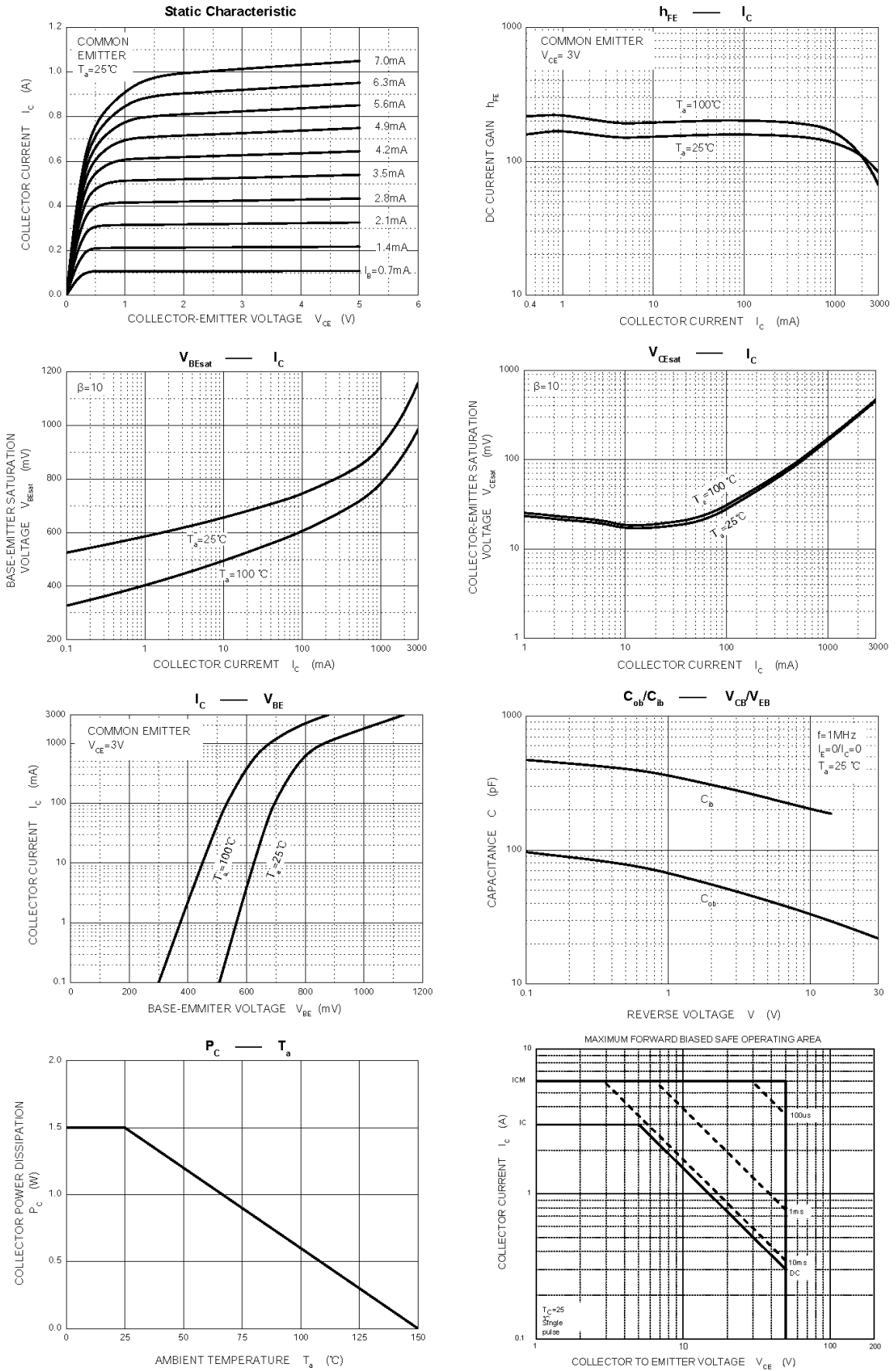
**CLASSIFICATION OF  $h_{FE(1)}$** 

RANK	2SD1760-P	2SD1760-Q	2SD1760-R
RANGE	82~ 180	120 ~ 270	180 ~ 390

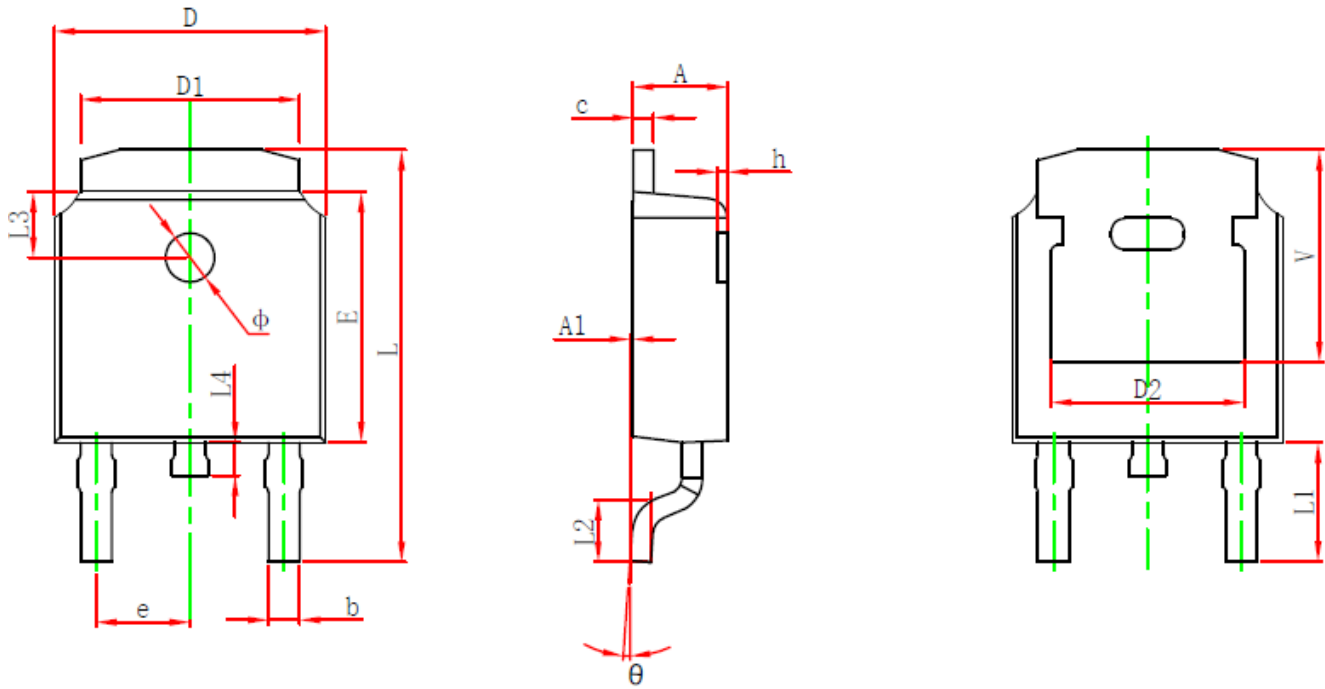
1) Measured with the device mounted on 1 inch<sup>2</sup> FR-4 board with 1oz. copper, in a still air environment with  $T_a = 25^\circ\text{C}$ .

2) Maximum allowed temperature  $T_j = 25^\circ\text{C}$ .

TYPICAL CHARACTERISTICS

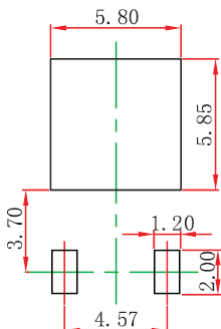


## TO-252-2L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.635	0.770	0.025	0.030
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.382	0.406
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
$\phi$	1.100	1.300	0.043	0.051
$\theta$	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.250 REF.		0.207 REF.	

## TO-252-2L SUGGESTED PAD LAYOUT



Note:

1. Controlling dimension in millimeters.
2. General tolerance:  $\pm 0.05$ mm.
3. The pad layout is for reference purpose only.

## Ordering information

Device	Package	Reel
2SD1760	TO-252-2L	2500/Tape