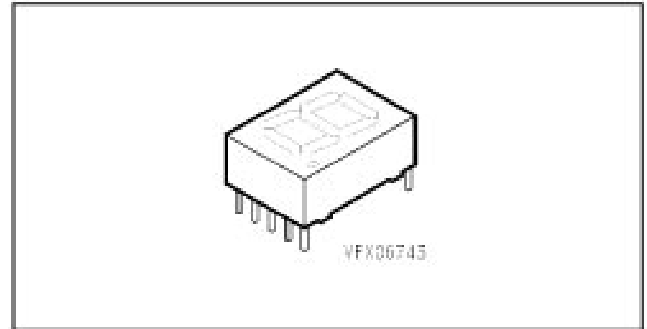


**Seven Segment Display**  
**13 mm (0.59")**  
**Low Current Version**

**HDN 1131 O**  
**HDN 1133 O**

**Features**

- Excellent character appearance
- Evenly lighted segments
- Wide viewing angle  $2\varphi = 50^\circ$
- Mitred corners on segments
- Grey package provides optimum contrast
- Low power consumption
- IC-compatible
- Right hand decimal



Type	Polarity	Color of emission	Luminous intensity/ Segment $I_F = 2 \text{ mA}$ $I_V (\mu\text{cd})$	Ordering code
HDN 1131 O	common anode	super-red	260 (typ.)	Q68000-A6433
HDN 1133 O	common cathode	super-red	260 (typ.)	Q68000-A6434

## Maximum Ratings ( $T_A = 25\text{ °C}$ )

Description	Symbol	Value	Unit
Operating temperature range	$T_{op}$	0 ... + 85	°C
Storage temperature range	$T_{stg}$	- 40 ... + 85	°C
Lead soldering temperature, 2 mm from base	$T_S$	260	°C for 3 s
Forward surge current per segment or DP <sup>1)</sup> $t_p \leq 10\ \mu\text{s}$	$I_{FM}$	100	mA
DC forward current per segment or DP <sup>2)</sup>	$I_F$	15	mA
Reverse voltage per segment or DP	$V_R$	6	V
Total power dissipation per segment or DP <sup>2)</sup>	$P_{tot}$	320	mW

1) Do not exceed maximum average current per segment (see graph of the peak forward current)

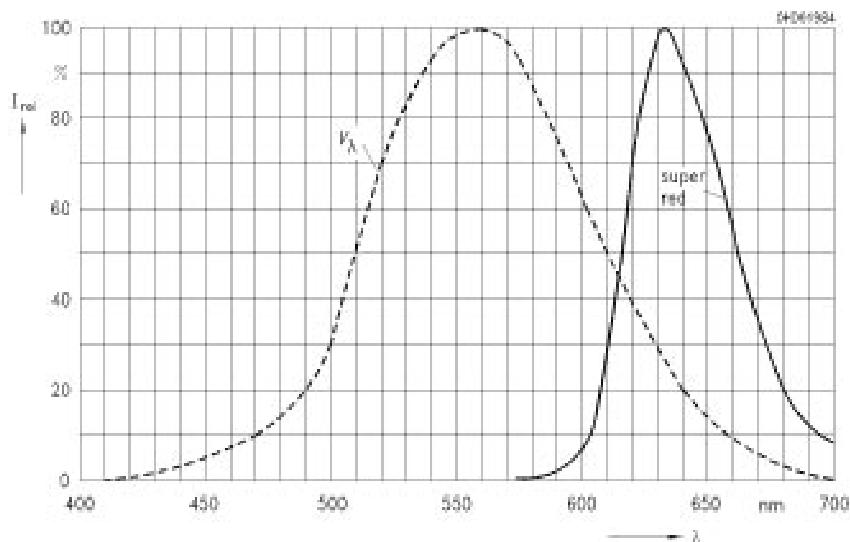
2) Derate maximum average current above  $T_A = 75\text{ °C}$  at 0.5 mA/°C per segment

## Characteristics ( $T_A = 25\text{ °C}$ )

Parameter	Symbol	Values			Unit
		min	typ.	ma	
Luminous intensity per segment (Digit average)					
2 mA	$I_V$	180	260	-	$\mu\text{cd}$
5 mA	$I_V$	-	100	-	$\mu\text{cd}$
20 mA PK, 1:4 Duty factor	$I_V$	-	0	-	$\mu\text{cd}$
Peak wavelength	$\lambda_{peak}$	-	635	-	nm
Dominant wavelength (Digit average)	$\lambda_{dom}$	612	-	625	nm
Forward voltage per segment or DP $I_F = 2\text{ mA}$	$V_F$	-	1.8	-	V
Break down voltage per Segment $I_R = 10\ \mu\text{A}$	$V_{BR}$	6	15	-	V
Thermal resistance LED junction-to-pin	$R_{th\text{ J-PIN}}$	-	-	180	°C/W/Seg

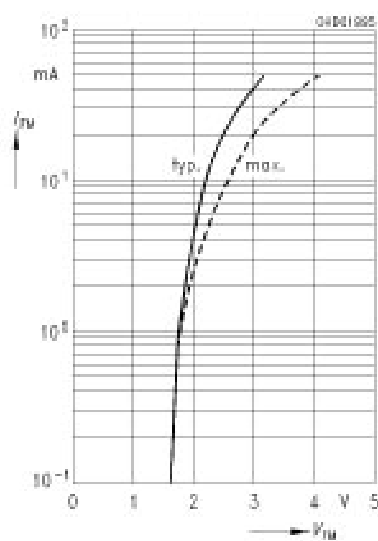
**Relative spectral emission  $I_{rel} = f(\lambda)$**

$V(\lambda)$  = Standard eye response curve



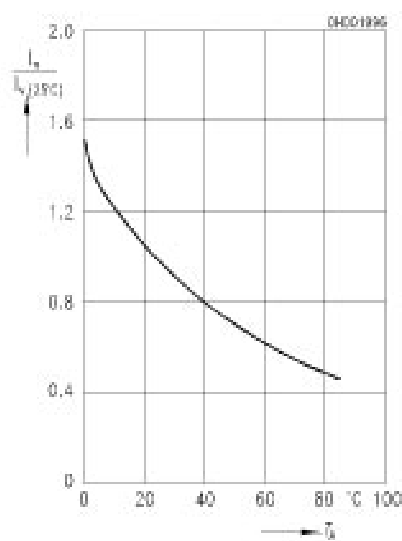
**Peak forward current  $I_{FM} = f(V_{FM})$**

$t_p / T = 0.001$ ,  $t_p = 10 \mu s$ ,  $T_A = 25^\circ C$



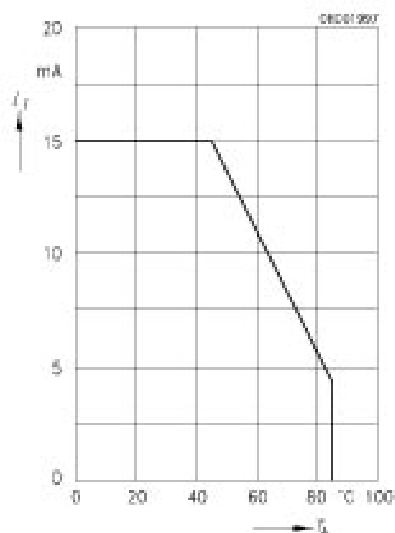
**Rel. luminous intensity  $I_v / I_v(25^\circ C) = f(T_A)$**

$I_F = 2 \text{ mA}$



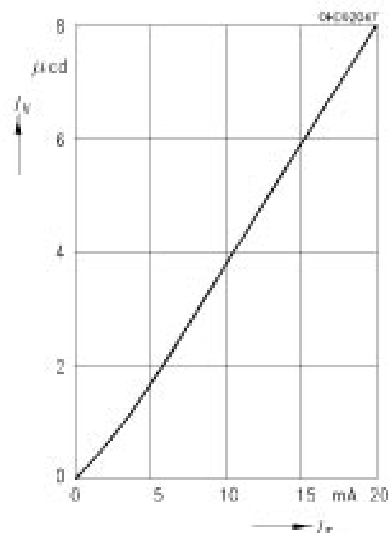
### Max. permissible forward current

$$I_F = f(T_A)$$



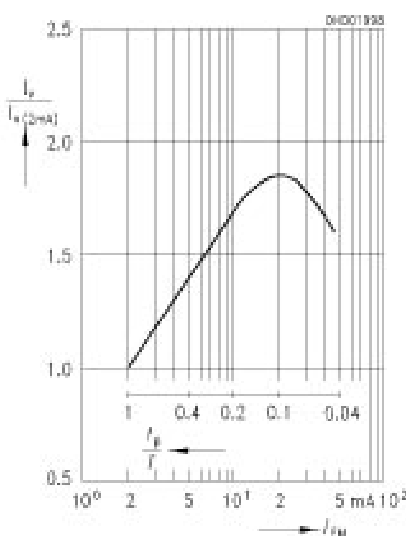
### Luminous intensity $I_V = f(I_F)$

$$T_A = 25\text{ °C}$$



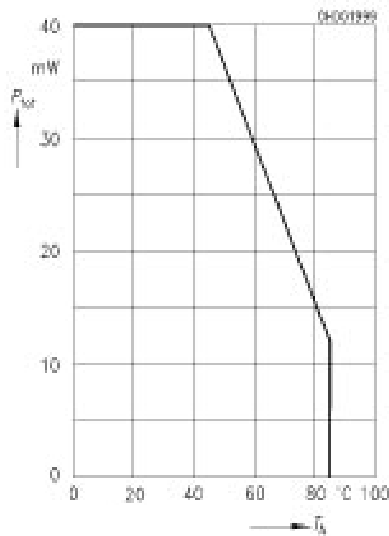
### Relative efficiency $I_V/I_V(2\text{ mA}) = f(I_{FM})$

$$T_A = 25\text{ °C}$$



### Total power dissipation per segment

$$P_{tot} = f(T_A)$$



## Package Outlines

