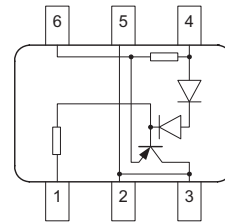
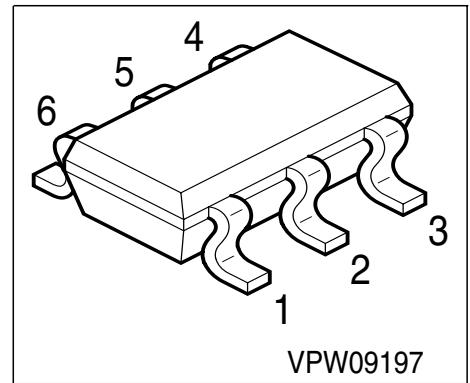


**LED Driver**

- Supplies stable bias current even at low battery voltage
- Ideal for stabilizing bias current of LEDs
- Negative temperature coefficient protects LEDs against thermal overload
- Suitable for 12V automotive applications



Type	Marking	Pin Configuration				Package
BCR405U	L5s	1 = GND	2;3;5 = $I_{out}$	4 = $V_S$	6 = $R_{ext}$	SC74

**Maximum Ratings**

Parameter	Symbol	Value	Unit
Source voltage	$V_S$	40	V
Output current $V_S = 10\text{ V}$	$I_{out}$	65	mA
Output voltage	$V_{out}$	38	V
Reverse voltage between all terminals	$V_R$	0.5	
Total power dissipation, $T_S = 117\text{ °C}$	$P_{tot}$	500	mW
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-65 ... 150	

**Thermal Resistance**

Parameter	Symbol	Value	Unit
Junction - soldering point <sup>1)</sup>	$R_{thJS}$	50	K/W

<sup>1)</sup>For calculation of  $R_{thJA}$  please refer to Application Note Thermal Resistance

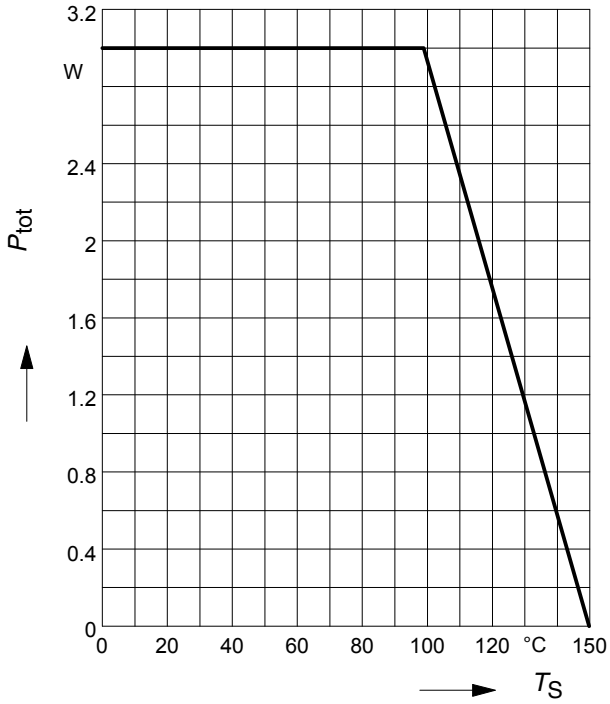
**Electrical Characteristics at  $T_A=25^\circ\text{C}$ , unless otherwise specified**

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>Characteristics</b>					
Supply current $V_S = 10\text{ V}$	$I_S$	-	500	900	$\mu\text{A}$
Output current $V_S = 10\text{ V}$	$I_{out}$	45	50	55	mA

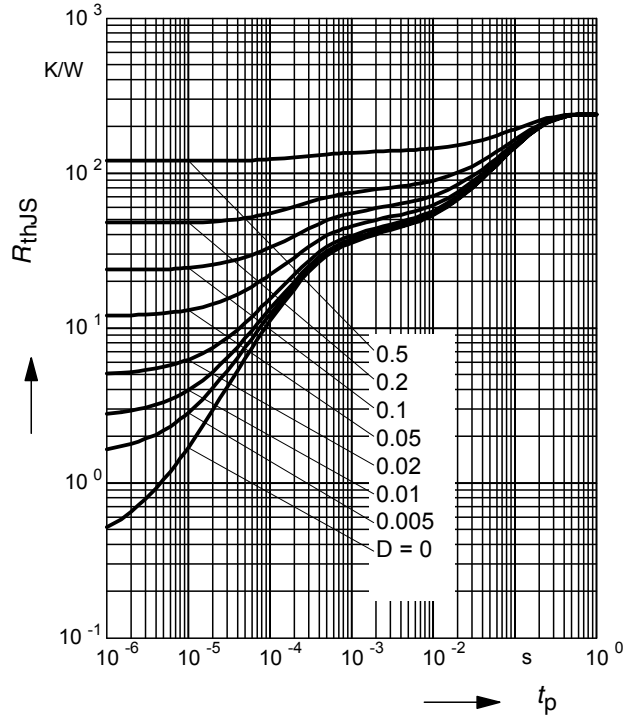
**DC Characteristics with stabilized LED load**

Lowest sufficient battery voltage overhead $I_{out} > 18\text{mA}$	$V_{Smin}$	-	1.4	-	V
Voltage drop ( $V_S - V_{CE}$ ) $I_{out} = 20\text{ mA}$	$V_{drop}$	-	0.8	-	
Output current change versus $T_A$ $V_S = 10\text{ V}$	$\Delta I_{out}/I_{out}$	-	-0.15	-	%/K
Output current change versus $V_S$ $V_S = 10\text{ V}$	$\Delta I_{out}/I_{out}$	-	1	-	%/V

**Total power dissipation  $P_{tot} = f(T_S)$**

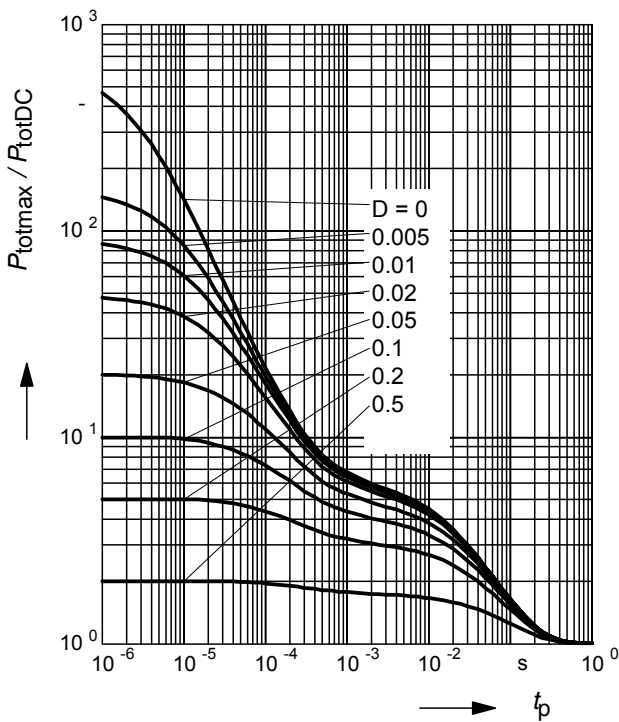


**Permissible Pulse Load  $R_{thJS} = f(t_p)$**



**Permissible Pulse Load**

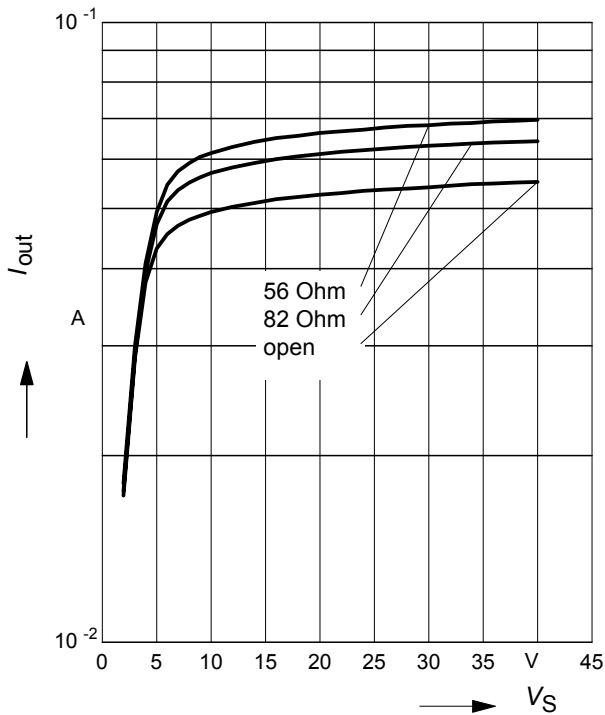
$P_{totmax} / P_{totDC} = f(t_p)$



**Output current versus supply voltage**

$I_{out} = f(V_S); R_{ext} = \text{Parameter}$

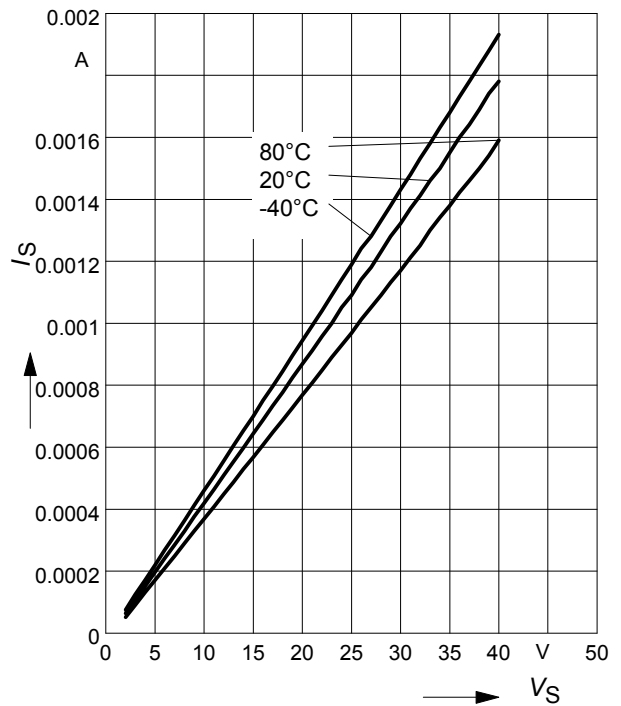
$V_S - V_{out} = 1.4 \text{ V}$



**Supply current versus supply voltage**

$I_S = f(V_S)$

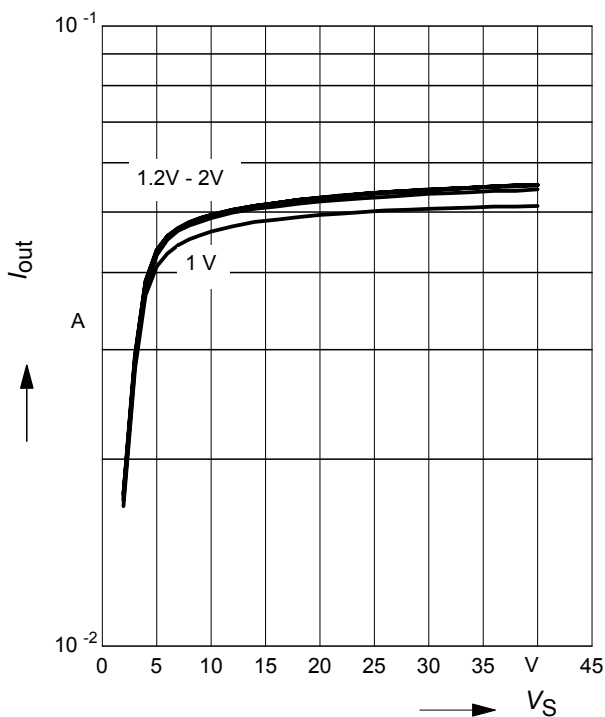
$T_A = \text{Parameter}$



**Output current versus supply voltage**

$I_{out} = f(V_S), T_A = 20^\circ\text{C}$

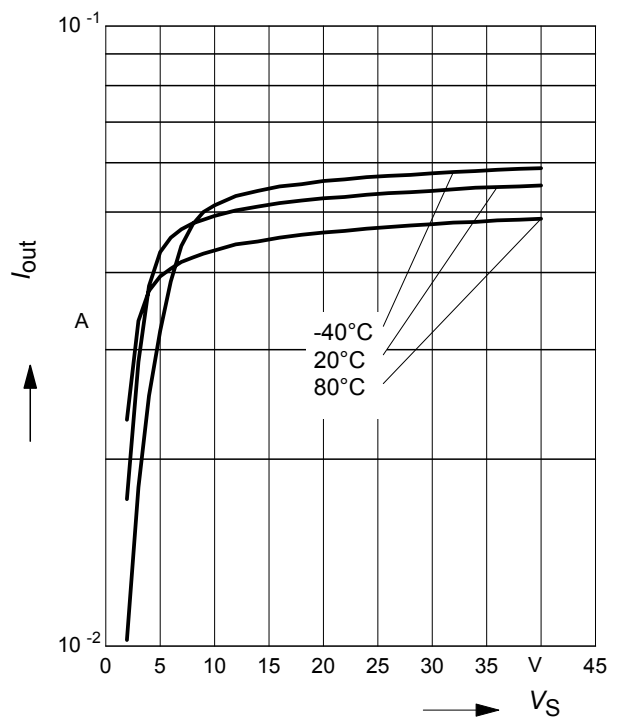
$V_S - V_{out}$  as Parameter



**Output current versus supply voltage**

$I_{out} = f(V_S), V_S - V_{out} = 1.4 \text{ V}$

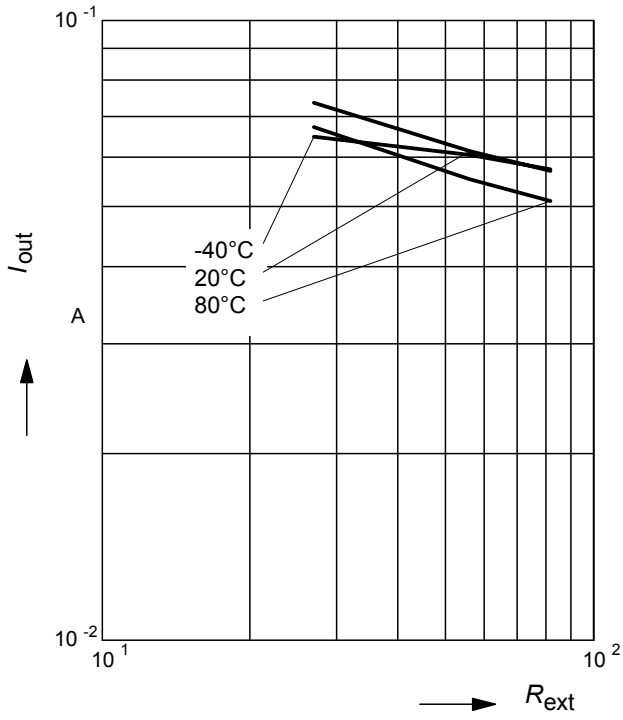
$T_A = \text{Parameter}$



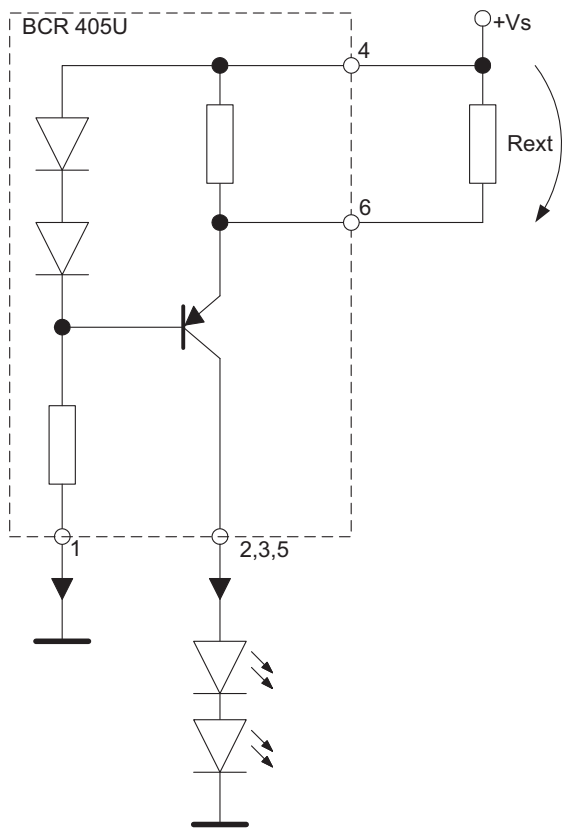
**Output current versus external resistor**

$I_{out} = (R_{ext}), V_S = 10V, V_S - V_{out} = 1.4 V$

$T_A = \text{Parameter}$



**Application Circuit:**



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