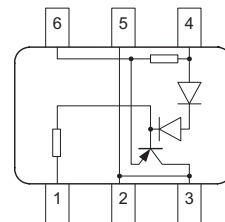
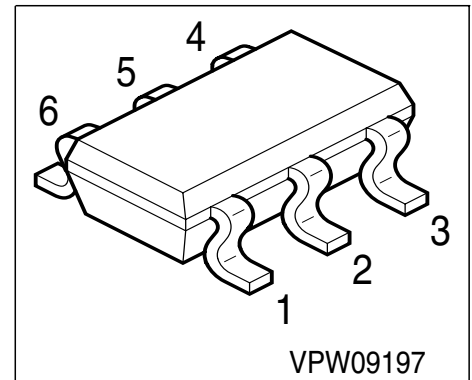


LED Driver

- 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 ¹⁾	R_{thJS}	50	K/W

¹⁾For calculation of R_{thJA} please refer to Application Note Thermal Resistance

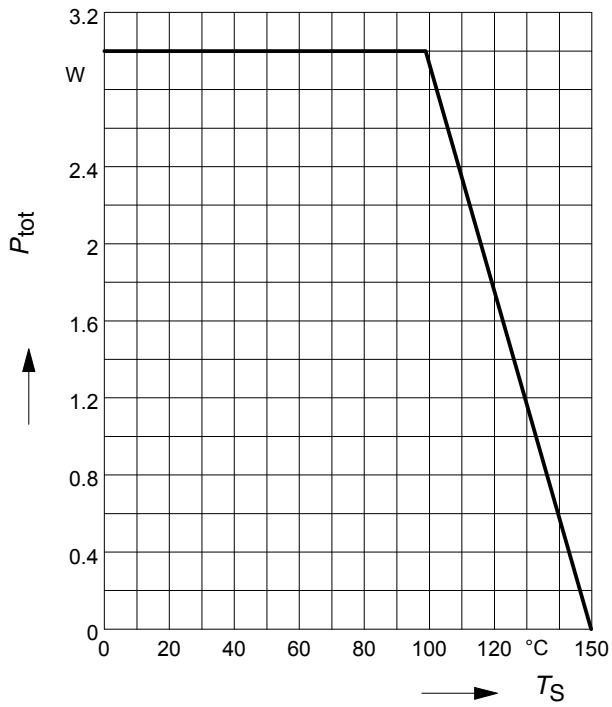
Electrical Characteristics at $T_A=25^{\circ}\text{C}$, unless otherwise specified

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

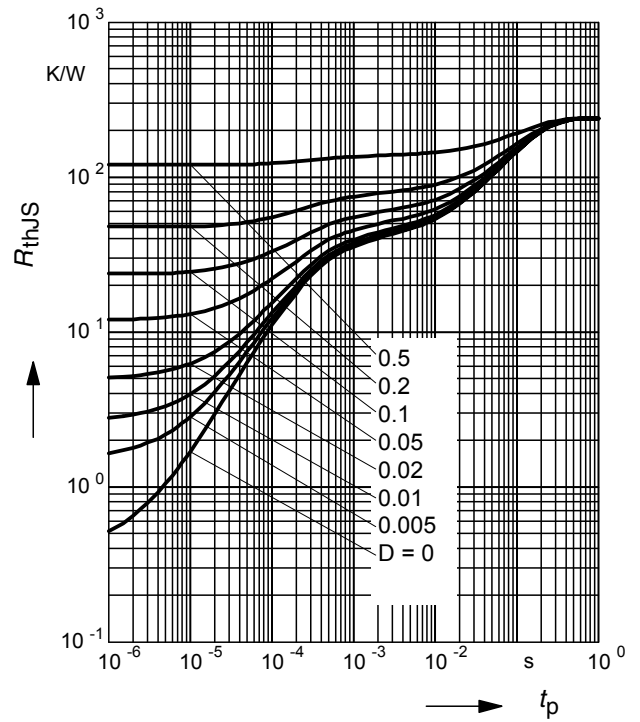
DC Characteristics with stabilized LED load

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

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

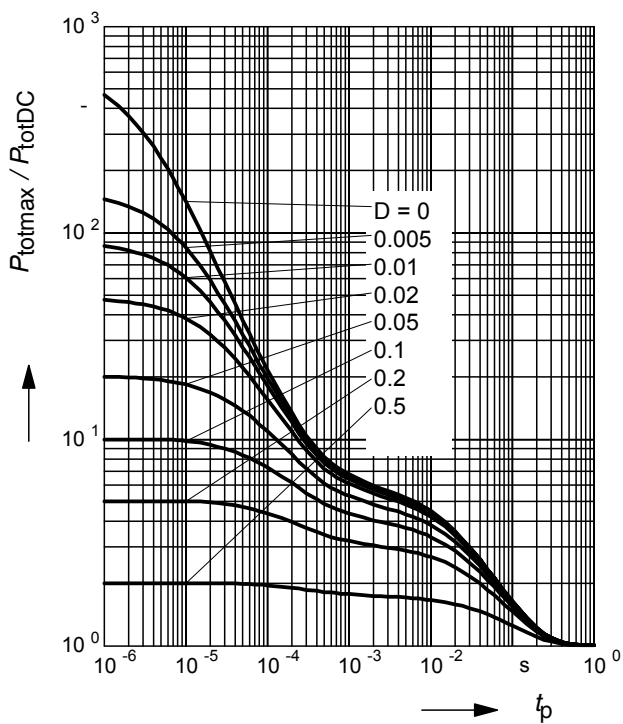


Permissible Pulse Load $R_{\text{thJS}} = f(t_p)$



Permissible Pulse Load

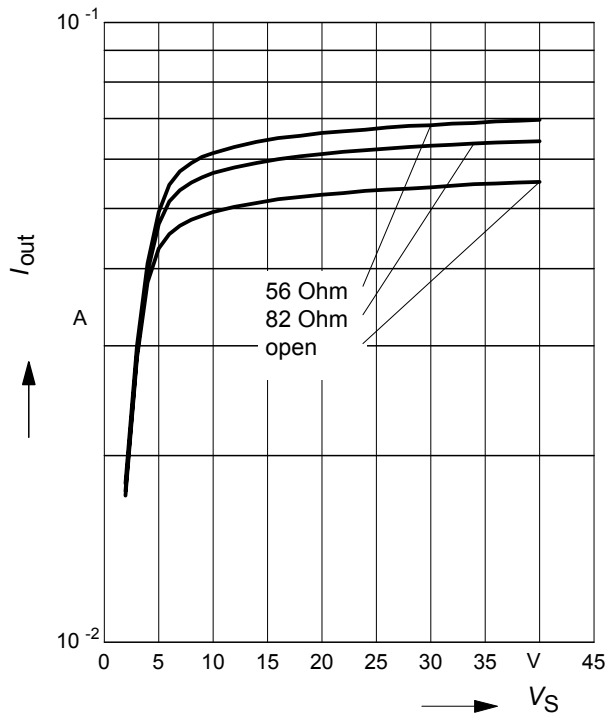
$P_{\text{totmax}} / P_{\text{totDC}} = f(t_p)$



Output current versus supply voltage

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

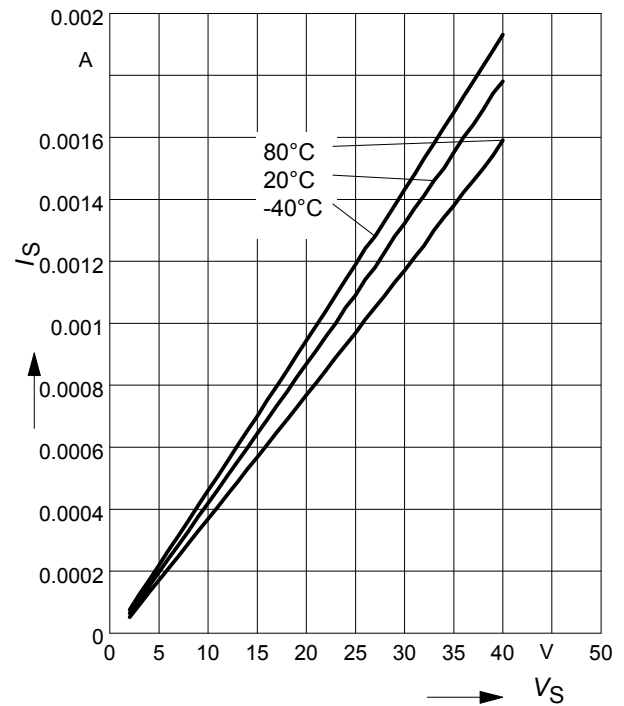
$$V_S - V_{out} = 1.4 \text{ V}$$



Supply current versus supply voltage

$$I_S = f(V_S)$$

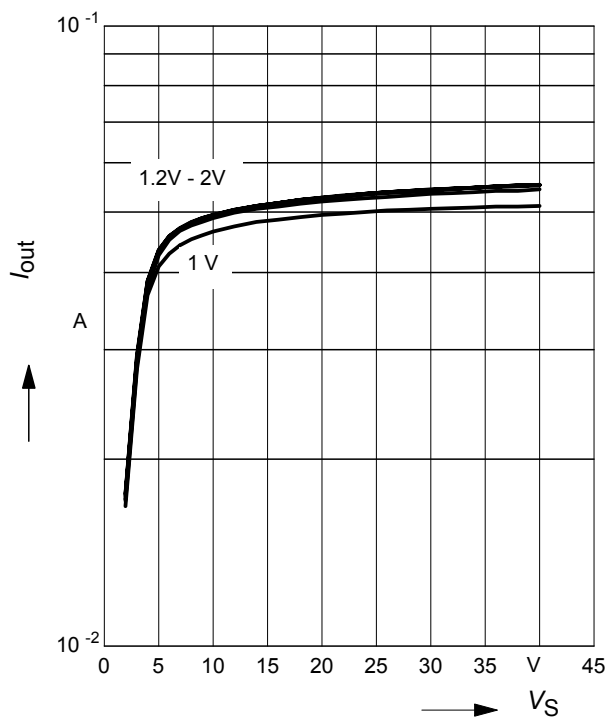
$$T_A = \text{Parameter}$$



Output current versus supply voltage

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

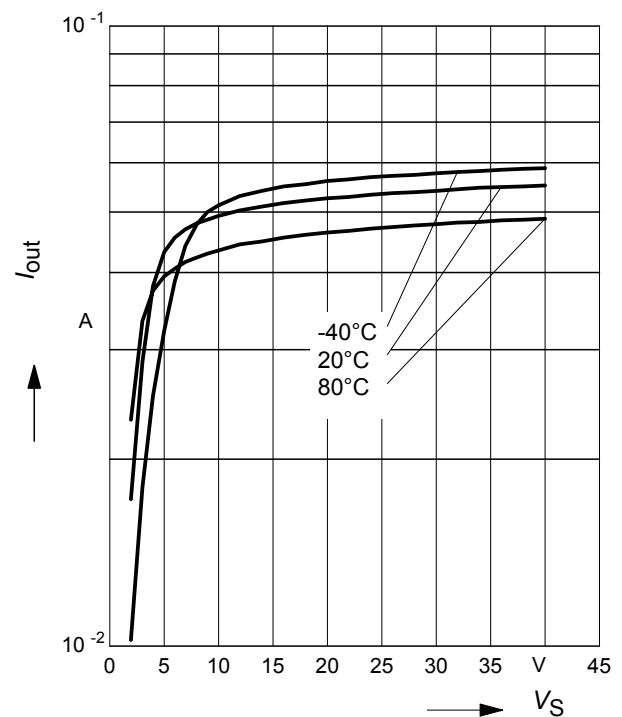
$$V_S - V_{out} \text{ as Parameter}$$



Output current versus supply voltage

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

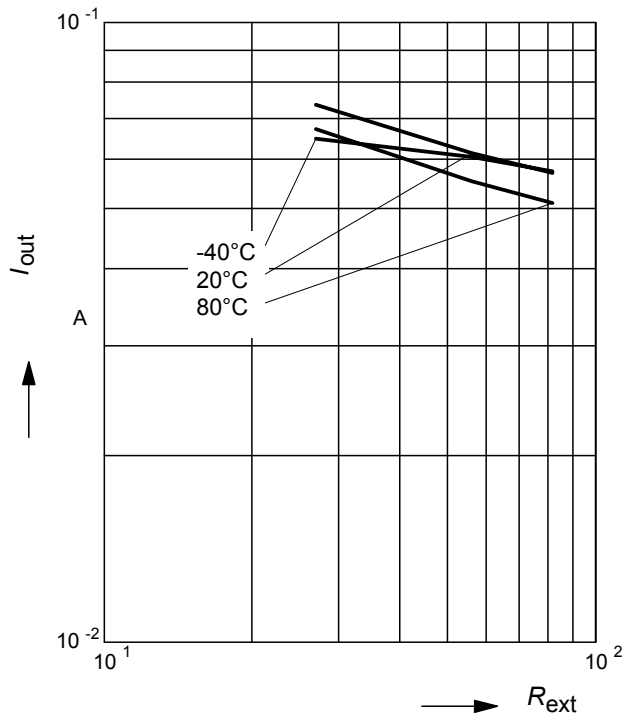
$$T_A = \text{Parameter}$$



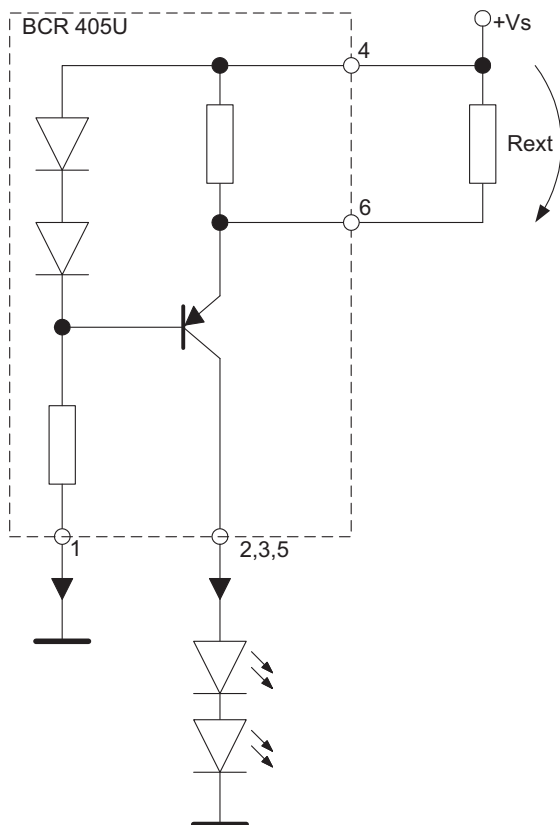
Output current versus external resistor

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

T_A = Parameter



Application Circuit:



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