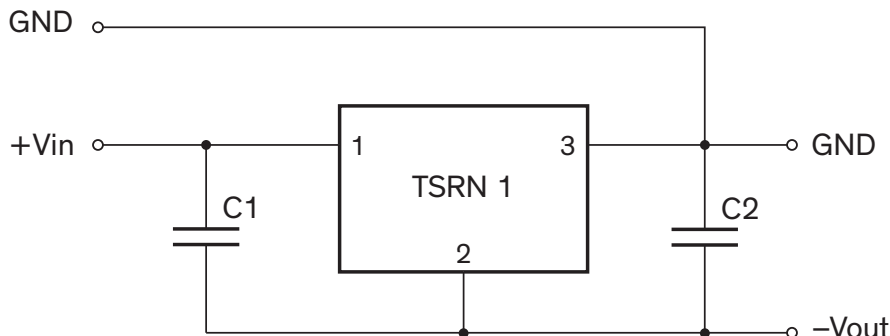


### Application note for negative output voltage

#### External circuit for negative output voltage



C1 = 10  $\mu$ F / 50 V, 1210 X5R MLCC  
C2 = 10  $\mu$ F / 25 V, 1206 X5R MLCC

#### Input / Output specifications

Order Code	Input voltage range	Output voltage nom.	Output current max.	Efficiency typ.
TSRN 1-2415	4.6 - 32 VDC (12 VDC)	-1.5 VDC	0.6 A	70 % (at Vin min.)
TSRN 1-2418	4.6 - 32 VDC (12 VDC)	-1.8 VDC	0.6 A	72 % (at Vin min.)
TSRN 1-2425	4.6 - 32 VDC (12 VDC)	-2.5 VDC	0.6 A	72 % (at Vin min.)
TSRN 1-2433	4.6 - 32 VDC (12 VDC)	-3.3 VDC	0.6 A	74 % (at Vin min.)
TSRN 1-2450	4.6 - 31 VDC (12 VDC)	-5.0 VDC	0.4 A	80 % (at Vin min.)
TSRN 1-2465	7.0 - 29 VDC (12 VDC)	-6.5 VDC	0.3 A	85 % (at Vin min.)
TSRN 1-2490	7.0 - 27 VDC (12 VDC)	-9.0 VDC	0.3 A	85 % (at Vin min.)
TSRN 1-24120	7.0 - 24 VDC (12 VDC)	-12 VDC	0.3 A	85 % (at Vin min.)
TSRN 1-24150	7.0 - 21 VDC (12 VDC)	-15 VDC	0.2 A	86 % (at Vin min.)