

Automotive use P-ch power MOSFET, -40 V product (U-MOSVI series, DPAK+ package)

TJ90S04M3L

A P-ch power MOSFET featuring low On-resistance and low gate drive voltage

Toshiba has launched TJ90S04M3L into the lineup of -40 V P-ch power MOSFET products for automotive applications. The new TJ90S04M3L features a gate drive voltage of -4.5 V compared with -6 V for the conventional product TJ80S04M3L in the DPAK+ package. This allows customer's system to be used even when the battery voltage drops. In addition, the new product also features industry-leading low On-resistance^{*1}.

Applications

Automotive equipment

- Load switches
(Replacement of mechanical relays)
- Motor drives



Automotive applications

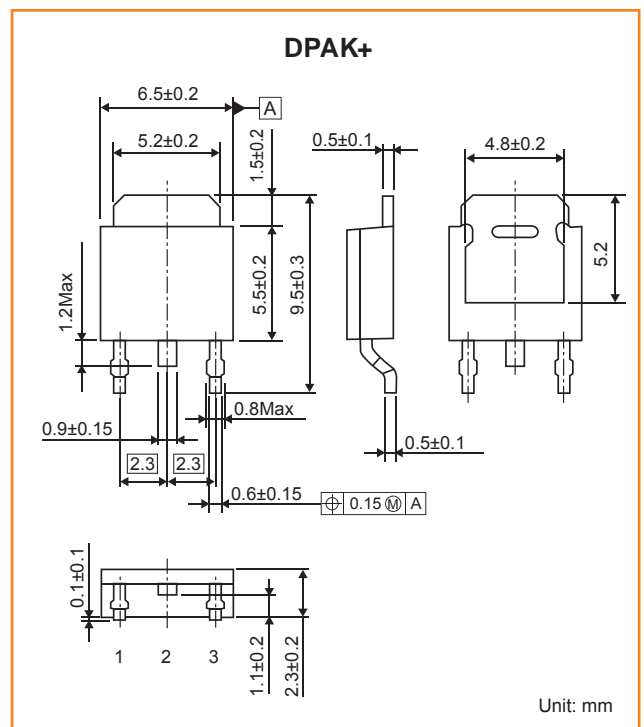
External View



Features

- Industry-leading low On-resistance^{*1}:
 $R_{DS(ON)}=6.0 \text{ m}\Omega \text{ (max) @}V_{GS}=-4.5 \text{ V}$
 $R_{DS(ON)}=4.3 \text{ m}\Omega \text{ (max) @}V_{GS}=-10 \text{ V}$
- Low gate drive voltage (-4.5 V)
- Narrow gate threshold voltage range:
 $V_{th}=-1.0 \text{ to } -2.0 \text{ V}$ (narrow: 1 V range)
- Low thermal resistance: $R_{th(ch-c)}=0.83^\circ\text{C/W}$ (max)
- Channel temperature ratings: $T_{ch}=175^\circ\text{C}$
- Low switching noise

Outline Drawing



^{*1}: Comparison with the product of the same maximum rating, according to a survey by Toshiba (as of April 2017).

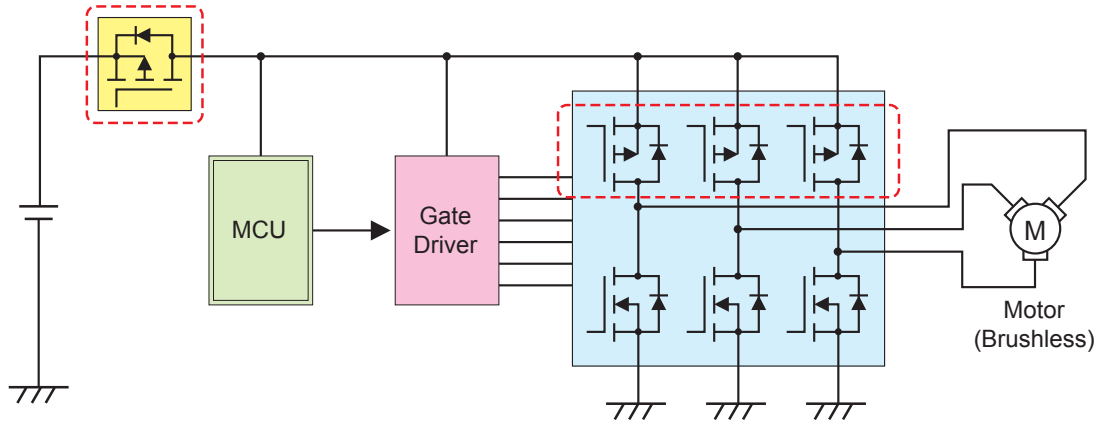
Main Specifications

(@T_a=25°C)

Polarity	Part number	Absolute maximum ratings			Drain-source On-resistance R _{DS(ON)} max (mΩ)		Gate threshold voltage V _{th} (V)	Channel-to-case thermal resistance R _{th(ch-c)} max (°C/W)	Package	Series
		Drain-source voltage V _{DSS} (V)	Drain current (DC) I _D (A)	Drain current (pulsed) I _{DP} (A)	@V _{GS} = -4.5 V	@V _{GS} = -10 V				
					6.0	4.3				
P-ch	TJ90S04M3L	-40	-90	-180			-1.0 to -2.0	0.83	DPAK+	U-MOSVI

Circuit Example

Brushless Motor



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