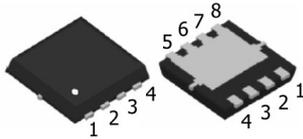


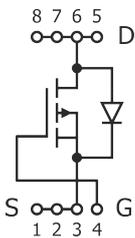
DI035P04PT P-Channel Power MOSFET P-Kanal Leistungs-MOSFET	I_{D25°C} = - 35 A R_{DS(on)} ~ 15 mΩ T_{jmax} = 150°C	V_{DSS} = - 40 V P_D = 25 W E_{AS} = 54 mJ
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Version 2021-09-03

QFN3x3
DFN3030



SPICE Model & STEP File ¹⁾



Marking Code
304P190

HS Code 85412100

Typical Applications

- Power Management Units
- Battery powered devices
- Load Switches, Polarity Protection
- Commercial grade
- Suffix -Q: AEC-Q101 compliant ¹⁾
- Suffix -AQ: in AEC-Q101 qualification ¹⁾

Features

- Tiny, space saving package
- Low profile height
- Low on state resistance
- Fast switching times
- Low gate charge
- Compliant to RoHS (exemp. 7a)
- REACH, Conflict Minerals ¹⁾

Mechanical Data ¹⁾

- Taped and reeled 5000 / 13"
- Weight approx. 0.1 g
- Case material UL 94V-0
- Solder & assembly conditions 260°C/10s
- MSL = 1



Typische Anwendungen

- Stromüberwachungseinheiten
- Batteriebetriebene Geräte
- Lastschalter, Verpolschutz
- Standardausführung
- Suffix -Q: AEC-Q101 konform ¹⁾
- Suffix -AQ: in AEC-Q101 Qualifikation ¹⁾

Besonderheiten

- Winzige, platzsparende Bauform
- Niedrige Bauhöhe
- Niedriger Einschaltwiderstand
- Schnelle Schaltzeiten
- Niedrige Gate-Ladung
- Konform zu RoHS (Ausn. 7a)
- REACH, Konfliktmineralien ¹⁾

Mechanische Daten ¹⁾

- Gegurtet auf Rolle
- Gewicht ca.
- Gehäusematerial
- Löt- und Einbaubedingungen

Maximum ratings ²⁾

Grenzwerte ²⁾

		DI035P04PT/-AQ	
Drain-Source voltage Drain-Source-Spannung	$V_{GS} = 0\text{ V (short)}$	- V_{DSS}	40 V
Gate-Source-voltage continuous – Gate-Source-Spannung dauernd		V_{GSS}	± 20 V
Power dissipation – Verlustleistung	$T_C = 25^\circ\text{C}^3)$	P_{tot}	40 W
Drain current continous Drainstrom dauernd	$T_C = 25^\circ\text{C}^3)$	- I_D	35 A
Drain current continous Drainstrom dauernd	$T_C = 100^\circ\text{C}^3)$	- I_D	24 A
Peak Drain current – Drain-Spitzenstrom	⁴⁾	- I_{DM}	120 A
Source current continous Sourcestrom dauernd	$T_C = 25^\circ\text{C}^3)$	- I_S	29 A
Peak Source current – Source-Spitzenstrom	$V_{GS} = 0\text{ V}, t_p = 10\text{ ms}$	- I_{SM}	80 A
Single pulse avalanche energy Einzelpuls Avalanche-Energie (Fig. 1)	$V_{DD} = 30\text{ V}, V_G = 10\text{ V}$ $L = 0.1\text{ mH}, R_G = 25\ \Omega$	E_{AS}	54 mJ
Junction temperature – Sperrschichttemperatur		T_j	-55...+150°C
Storage temperature – Lagerungstemperatur		T_s	-55...+150°C

1 Please note the [detailed information on our website](#) or at the beginning of the data book
Bitte beachten Sie die [detaillierten Hinweise auf unserer Internetseite](#) bzw. am Anfang des Datenbuches
2 $T_A = 25^\circ\text{C}$, unless otherwise specified – $T_A = 25^\circ\text{C}$, wenn nicht anders angegeben
3 Measured towards heat sink area (Drain) – Gemessen zur Kühlfläche (Drain)
4 Pulse width refer to SOA diagram – Pulsbreite siehe SOA-Diagramm

Characteristics (static)
Kennwerte (statisch)

		$T_j = 25^\circ\text{C}$	Min.	Typ.	Max.
Drain-Source breakdown voltage – Drain-Source-Durchbruchspannung - $I_D = 250 \mu\text{A}$ - $V_{GS} = 0 \text{ V}$ (short)		- $V_{(BR)DSS}$	40 V	–	–
Drain-Source leakage current – Drain-Source Leckstrom $V_{DS} = 32 \text{ V}$ - $V_{GS} = 0 \text{ V}$ (short)		- I_{DSS}	–	–	1 μA
Gate-Body leakage current – Gate-Substrat Leckstrom $V_{GS} = \pm 20 \text{ V}$ - $V_{DS} = 0 \text{ V}$ (short)		I_{GSS}	–	–	$\pm 100 \text{ nA}$
Gate-Source threshold voltage – Gate-Source Schwellspannung $V_{GS} = V_{DS}$ - $I_D = 250 \mu\text{A}$		- $V_{GS(th)}$	1.2 V	–	2.5 V
Drain-Source on-state resistance – Drain-Source Einschaltwiderstand - $V_{GS} = 10 \text{ V}$ - $I_D = 10 \text{ A}$ - $V_{GS} = 4.5 \text{ V}$ - $I_D = 8 \text{ A}$		$R_{DS(on)}$	–	15 m Ω –	19 m Ω 29 m Ω

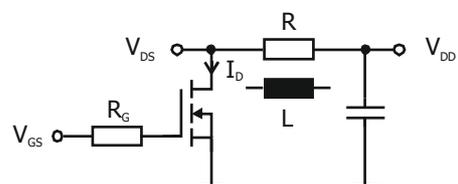
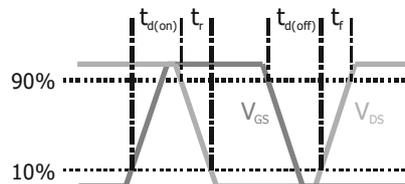
Characteristics (dynamic)
Kennwerte (dynamisch)

		$T_j = 25^\circ\text{C}$	Min.	Typ.	Max.
Forward Transconductance – Übertragungsteilheit - $V_{DS} = 5 \text{ V}$ - $I_D = 5 \text{ A}$		g_{FS}	–	15 S	–
Input Capacitance – Eingangskapazität - $V_{DS} = 20 \text{ V}$ $V_{GS} = 0 \text{ V}$ $f = 1 \text{ MHz}$		C_{iss}	–	2570 pF	–
Output Capacitance – Ausgangskapazität - $V_{DS} = 20 \text{ V}$ $V_{GS} = 0 \text{ V}$ $f = 1 \text{ MHz}$		C_{oss}	–	1750 pF	–
Reverse Transfer Capacitance – Rückwirkungskapazität - $V_{DS} = 20 \text{ V}$ $V_{GS} = 0 \text{ V}$ $f = 1 \text{ MHz}$		C_{rss}	–	110 pF	–
Turn-On Delay & Rise Time – Einschaltverzögerung und Anstiegszeit - $V_{DD} = 20 \text{ V}$ - $I_D = 10 \text{ A}$ - $V_{GS} = 10 \text{ V}$ $R_G = 3.3 \Omega$ (Fig. 1)		$t_{d(on)}$ t_r	–	14 ns 26 ns	–
Turn-Off Delay & Fall Time – Ausschaltverzögerung und Abfallzeit - $V_{DD} = 20 \text{ V}$ - $I_D = 10 \text{ A}$ - $V_{GS} = 0 \text{ V}$ $R_G = 3.3 \Omega$ (Fig. 1)		$t_{d(off)}$ t_f	–	27 ns 5 ns	–
Total Gate Charge – Gesamte Gate-Ladung - $V_{DD} = 20 \text{ V}$ - $I_D = 10 \text{ A}$ - $V_{GS} = 10 \text{ V}$		Q_g	–	30 nC	–
Gate-Source Charge – Gate-Source-Ladung - $V_{DD} = 20 \text{ V}$ - $I_D = 10 \text{ A}$ - $V_{GS} = 10 \text{ V}$		Q_{gs}	–	4.5 nC	–
Gate-Drain Charge – Gate-Drain-Ladung - $V_{DD} = 20 \text{ V}$ - $I_D = 10 \text{ A}$ - $V_{GS} = 10 \text{ V}$		Q_{gd}	–	9.5 nC	–
Intrinsic Gate resistance – Innerer Gatewiderstand $f = 1 \text{ Mhz}$ D open		R_{Gi}	–	5.1 Ω	–

Fig. 1

Test circuit for switching times (R) and avalanche energy (L)
("rise" and "fall" refer to I_D)

Testaufbau für Schaltzeiten (R) und Avalanche-Energie (L)
("rise" und "fall" beziehen sich auf I_D)



Characteristics (diode)

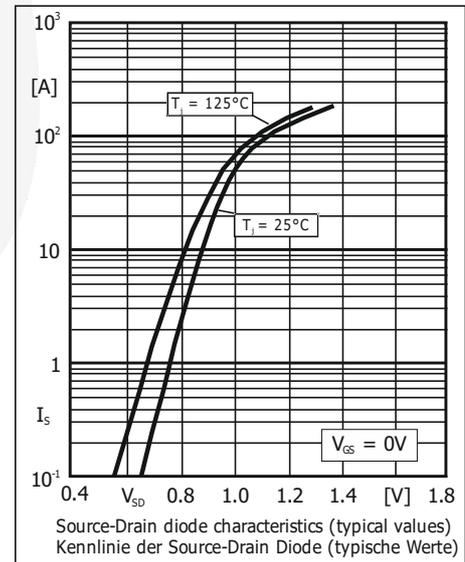
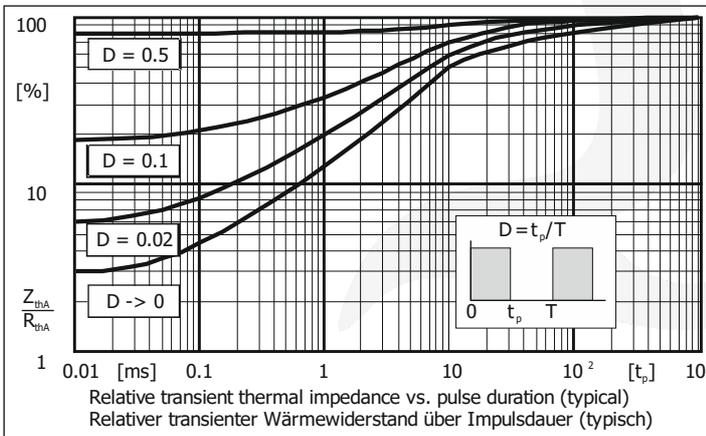
Kennwerte (Diode)

		$T_j = 25^\circ\text{C}$	Min.	Typ.	Max.
Forward voltage – Durchlass-Spannung - $V_{GS} = 0\text{ V}$ - $I_S = 1\text{ A}$		$-V_{SD}$	-	-	1.2 V
Reverse recovery time – Sperrverzugszeit - $I_S = 10\text{ A}$, - $di/dt = -100\text{ A}/\mu\text{s}$		t_{rr}	-	15 ns	-
Reverse recovery charge – Sperrverzugsladung - $I_S = 10\text{ A}$, - $di/dt = -100\text{ A}/\mu\text{s}$		Q_{rr}	-	9 nC	-

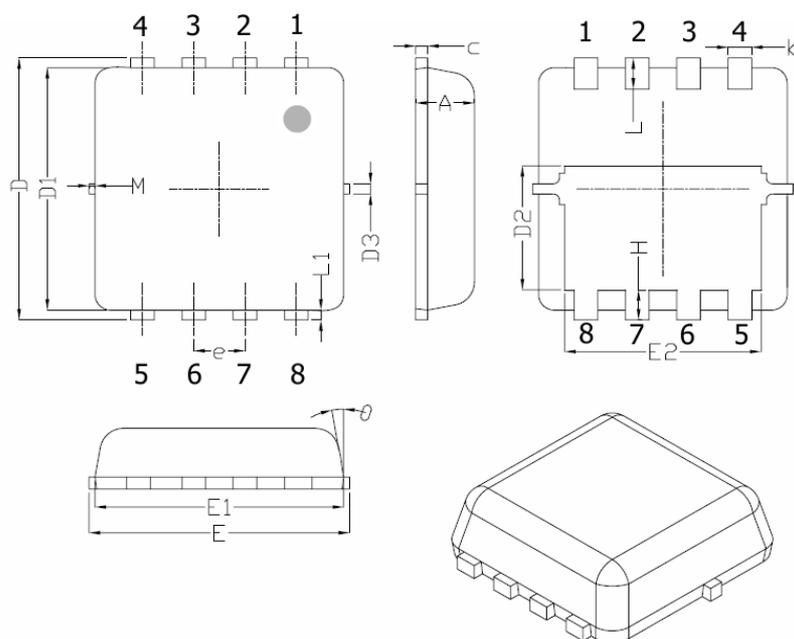
Characteristics (thermal)

Kennwerte (thermisch)

		Min.	Typ.	Max.
Thermal resistance junction to case Wärmewiderstand Sperrschicht – Gehäuse	R_{thc}	-	5 K/W ¹⁾	-



1 Measured towards heat sink area (Drain) – Gemessen zur Kühlfläche (Drain)



Symbol	Dimensions in Millimeters		
	Min.	Nom.	Max.
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.48	1.58	1.68
D3	-	0.13	-
E	3.20	3.30	3.40
E1	3.00	3.15	3.20
E2	2.39	2.49	2.59
e	0.65BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	-	0.13	-
M	*	*	0.15
θ		10°	12°

Dimensions - Maße [mm]

Disclaimer: See data book page 2 or [website](#)
Haftungsausschluss: Siehe Datenbuch Seite 2 oder [Internet](#)