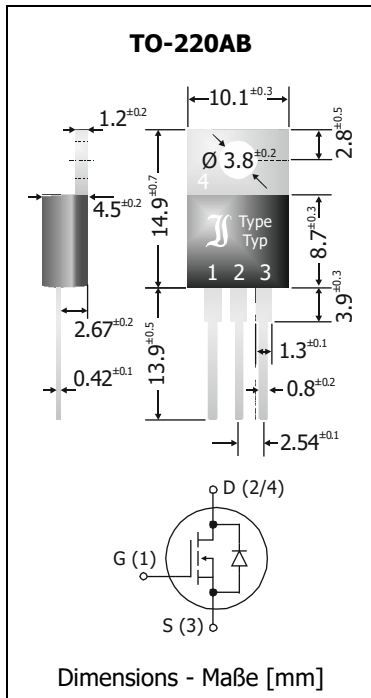


DIT090N06 N-Channel Power MOSFET N-Kanal Leistungs-MOSFET	$I_{D25^{\circ}C} = 90 \text{ A}$ $R_{DS(on)} \sim 5.7 \text{ m}\Omega$ $T_{jmax} = 175^{\circ}C$	$V_{DSS} = 65 \text{ V}$ $P_D = 160 \text{ W}$ $E_{AS} = 450 \text{ mJ}$
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Version 2020-01-27



Typical Applications

- DC/DC Converters
- Power Supplies
- DC Drives
- Power Tools
- Commercial grade ¹⁾

Features

- Advanced Trench Technology
- Low on state resistance
- Fast switching times
- Low gate charge
- Avalanche rated
- Compliant to RoHS, REACH, Conflict Minerals ¹⁾

Mechanical Data ¹⁾

Packed in tubes/cardboards	50/1000
Weight approx.	2.2 g
Case material	UL 94V-0
Solder & assembly conditions	260°C/10s MSL N/A



Typische Anwendungen

- Gleichstrom-Wandler
- Stromversorgungen
- Gleichstrom-Antriebe
- Elektrowerkzeuge
- Standardausführung ¹⁾

Besonderheiten

- Advanced Trench Technologie
- Niedriger Einschaltwiderstand
- Schnelle Schaltzeiten
- Niedrige Gate-Ladung
- Avalanche-Charakteristik
- Konform zu RoHS, REACH, Konfliktmineralien ¹⁾

Mechanische Daten ¹⁾

Verpackt in Stangen/Kartons	Gewicht ca.
	Gehäusematerial
Löt- und Einbaubedingungen	

Maximum ratings ²⁾

Grenzwerte ²⁾

		DIT090N06	
Drain-Source voltage Drain-Source-Spannung	$V_{GS} = 0 \text{ V (short)}$	V_{DSS}	65 V
Gate-Source-voltage continuous Gate-Source-Spannung dauernd		V_{GSS}	$\pm 20 \text{ V}$
Power dissipation Verlustleistung	$T_C = 25^{\circ}C$ ³⁾	P_{tot}	160 W
Drain current continuous Drainstrom dauernd	$T_C = 25^{\circ}C$ ³⁾	I_D	90 A
Drain current continuous Drainstrom dauernd	$T_C = 100^{\circ}C$ ³⁾	I_D	62 A
Peak Drain current – Drain-Spitzenstrom	⁴⁾	I_{DM}	310 A
Source current continuous Sourcestrom dauernd	$T_C = 25^{\circ}C$ ³⁾	I_S	30 A
Peak Source current – Source-Spitzenstrom	$V_{GS} = 0 \text{ V}, t_p = 300 \mu\text{s}$	I_{SM}	78 A
Single pulse avalanche energy Einzelpuls Avalanche-Energie (Fig. 1)	$V_{DD} = 35 \text{ V}, V_G = 10 \text{ V}$ $L = 0.5 \text{ mH}, R_G = 25 \Omega$	E_{AS}	450 mJ
Junction temperature – Sperrschichttemperatur Storage temperature – Lagerungstemperatur		T_j T_s	-55...+175°C -55...+175°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 $T_A = 25^{\circ}C$, unless otherwise specified – $T_A = 25^{\circ}C$, wenn nicht anders angegeben
 3 Measured at heat flange – Gemessen an der Kühlfahne
 4 Pulse width refer to SOA diagram – Pulsbreite siehe SOA-Diagramm

Characteristics (static)
Kennwerte (statisch)

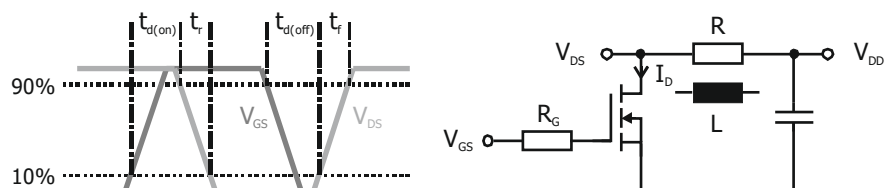
		$T_j = 25^\circ\text{C}$	Min.	Typ.	Max.
Drain-Source breakdown voltage – Drain-Source-Durchbruchspannung	$I_D = 250 \mu\text{A}$ $V_{GS} = 0 \text{ V}$ (short)	$V_{(BR)DSS}$	70 V	–	–
Drain-Source leakage current – Drain-Source Leckstrom	$V_{DS} = V_{DSS}$ $V_{GS} = 0 \text{ V}$ (short)	I_{DSS}	–	–	1 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	$V_{GS} = V_{DS}$ $I_D = 250 \mu\text{A}$	$V_{GS(th)}$	2 V	2.9V	4 V
Drain-Source on-state resistance – Drain-Source Einschaltwiderstand	$V_{GS} = 10 \text{ V}$ $I_D = 30 \text{ A}$	$R_{DS(on)}$	–	5.7 m Ω	7 m Ω

Characteristics (dynamic)
Kennwerte (dynamisch)

		$T_j = 25^\circ\text{C}$	Min.	Typ.	Max.
Forward Transconductance – Übertragungsteilheit	$V_{DS} = 10 \text{ V}$ $I_D = 60 \text{ A}$	g_{FS}	–	50 S	–
Input Capacitance – Eingangskapazität	$V_{DS} = 25 \text{ V}$ $V_{GS} = 0 \text{ V}$ $f = 1 \text{ MHz}$	C_{iss}	–	3400 pF	–
Output Capacitance – Ausgangskapazität	$V_{DS} = 25 \text{ V}$ $V_{GS} = 0 \text{ V}$ $f = 1 \text{ MHz}$	C_{oss}	–	310 pF	–
Reverse Transfer Capacitance – Rückwirkungskapazität	$V_{DS} = 25 \text{ V}$ $V_{GS} = 0 \text{ V}$ $f = 1 \text{ MHz}$	C_{rss}	–	221 pF	–
Turn-On Delay & Rise Time – Einschaltverzögerung und Anstiegszeit	$V_{DD} = 30 \text{ V}$ $I_D = 30 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_G = 2.5 \Omega$ (Fig. 1)	$t_{d(on)}$ t_r	–	15 ns 11 ns	–
Turn-Off Delay & Fall Time – Ausschaltverzögerung und Abfallzeit	$V_{DD} = 30 \text{ V}$ $I_D = 30 \text{ A}$ $V_{GS} = 0 \text{ V}$ $R_G = 2.5 \Omega$ (Fig. 1)	$t_{d(off)}$ t_f	–	52 ns 13 ns	–
Total Gate Charge – Gesamte Gate-Ladung	$V_{DD} = 30 \text{ V}$ $I_D = 30 \text{ A}$ $V_{GS} = 10 \text{ V}$	Q_g	–	94 nC	–
Gate-Source Charge – Gate-Source-Ladung	$V_{DD} = 30 \text{ V}$ $I_D = 30 \text{ A}$ $V_{GS} = 10 \text{ V}$	Q_{gs}	–	16 nC	–
Gate-Drain Charge – Gate-Drain-Ladung	$V_{DD} = 30 \text{ V}$ $I_D = 30 \text{ A}$ $V_{GS} = 10 \text{ V}$	Q_{gd}	–	24 nC	–
Intrinsic Gate resistance – Innerer Gatewiderstand	$f = 1 \text{ Mhz}$ D open	R_{Gi}	–	tbd 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)

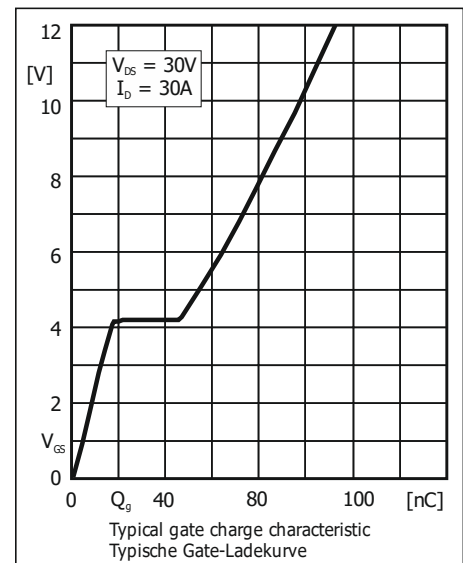
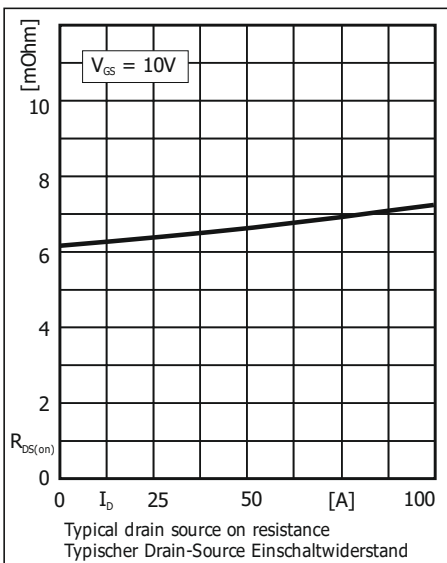
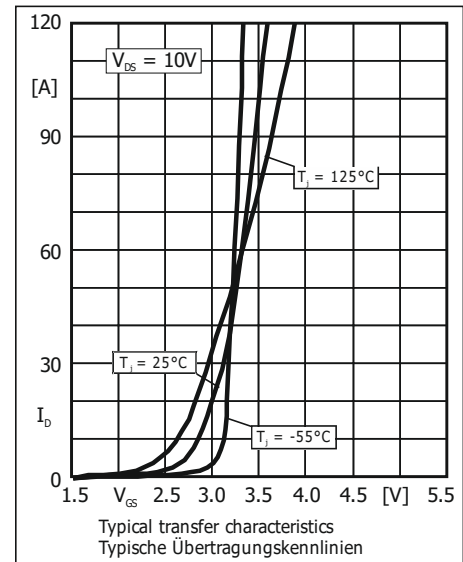
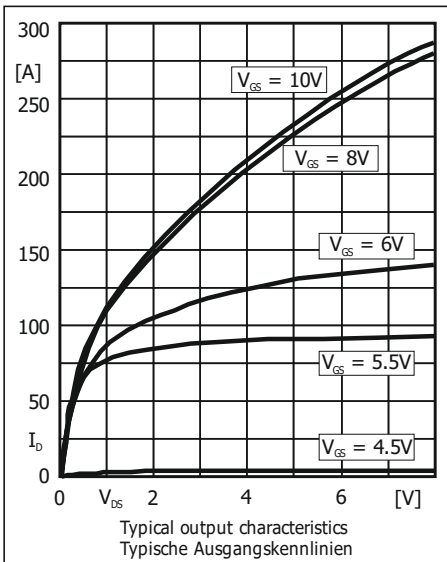
Kennwerte (Diode)

		$T_j = 25^\circ\text{C}$	Min.	Typ.	Max.
Forward voltage – Durchlass-Spannung $V_{GS} = 0\text{ V}$ $I_S = 30\text{ A}$		V_{SD}	–	–	1.2 V
Reverse recovery time – Sperrverzugszeit $I_S = 30\text{ A}$, $di/dt = -100\text{ A}/\mu\text{s}$		t_{rr}	–	33 ns	–
Reverse recovery charge – Sperrverzugsladung $I_S = 30\text{ A}$, $di/dt = -100\text{ A}/\mu\text{s}$		Q_{rr}	–	54 nC	–

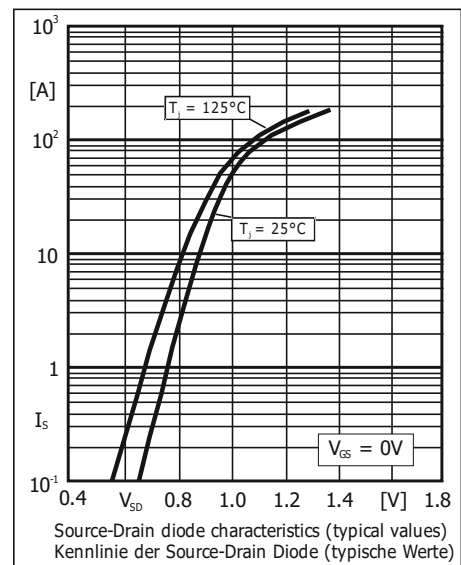
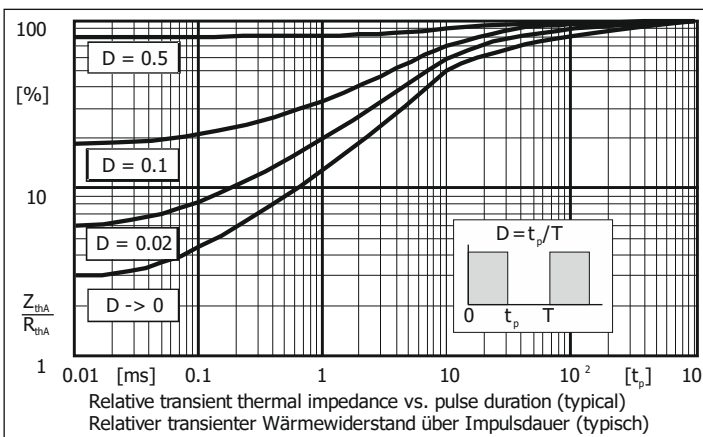
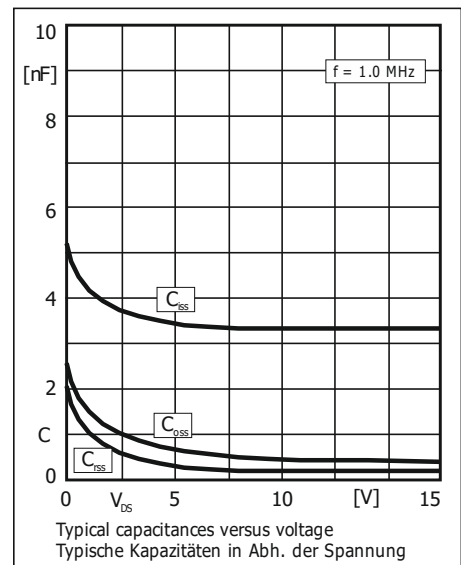
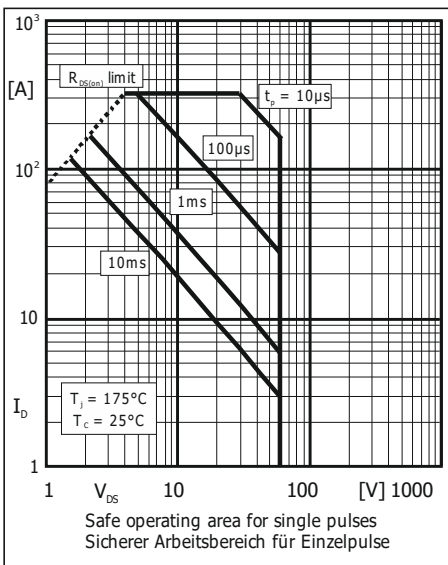
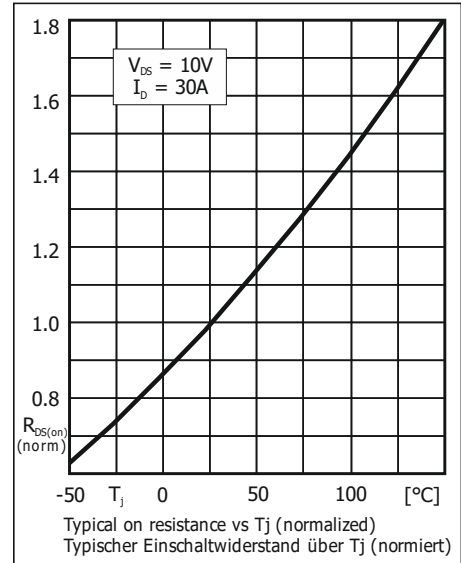
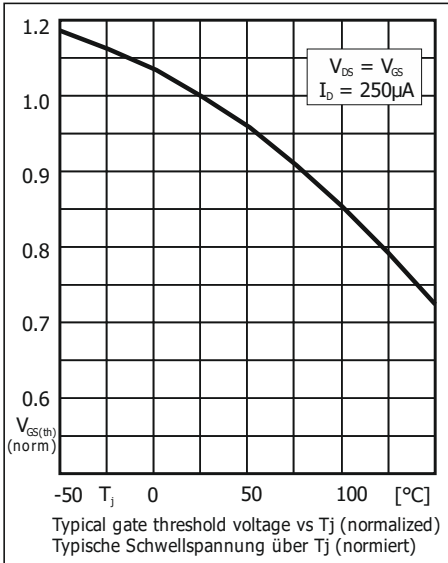
Characteristics (thermal)

Kennwerte (thermisch)

		Min.	Typ.	Max.	
Thermal resistance junction to case Wärmewiderstand Sperrschicht – Gehäuse		R_{thc}	–	0.9 K/W ¹⁾	–



1 Measured at heat flange – Gemessen an der Kühlfahne



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