

Description

This 70V 80A N-Channel MOSFET in a TO-220 Plastic Package.

Applications

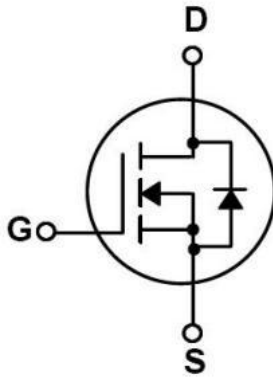
- Suited for AD-DC Power switch
- DC-DC Power converter
- High Voltage H-Bridge PWM Motor Drive

Features

- Low $R_{DS(on)}$
- Low gate charge
- Low C_{rss}
- Fast switching

V_{DSS}	$R_{DS(on)}$ (Typ)	I_D
70V	5.8m Ω	80A

Equivalent Circuit & Pinning



Absolute Maximum Ratings(Ta=25°C)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V _{DSS}	70	V
Drain Current ^G		I _D (T _c =25℃)	80	A
		I _D (T _c =100℃)	62	A
Drain Current - Pulsed ^C		I _{DM}	308	A
Gate-Source Voltage		V _{GS}	±20	V
Single Pulsed Avalanche Energy(L=0.5mH)		E _{AS}	350	mJ
Avalanche Current		I _{AS}	30	A
Power Dissipation ^B		P _D (T _c =25℃)	175	W
		P _D (T _c =100℃)	67	W
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to 150	℃
Maximum Junction-to-Ambient ^A	Steady-State	R _{θJA}	62	℃/W
Maximum Junction-to-Case ^B	Steady-State	R _{θJC}	0.7	℃/W

Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DS}	$V_{GS}=0V$ $I_D=250\mu A$	70			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=68V$ $V_{GS}=0V$			1	μA
		$V_{DS}=68V$ $T_J=55^{\circ}\text{C}$			5	
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=\pm 20V$ $V_{DS}=0V$			100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	2.0	2.8	4.0	V
Total gate charge	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=35A$		5.8	7	mΩ
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_S=1A$			1.4	V

Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Gate resistance	R_g	$V_{GS}=0V$ $V_{DS}=0V$ $f=1MHz$		1.25		Ω
Input Capacitance	C_{iss}	$V_{DS}=30V$ $V_{GS}=0V$ $f=1.0MHz$		2180		pF
Output Capacitance	C_{oss}			614		pF
Reverse Transfer Capacitance	C_{rss}			110		pF
Total Gate Charge(10V)	Q_g	$V_{GS}=10V$ $V_{DS}=30V$ $I_D=20A$		53	75	nC
Total Gate Charge(4.5V)	Q_g			22	31	nC
Gate Source Charge	Q_{gs}			17	31	nC
Gate Drain Charge	Q_{gd}			5		nC
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=30V$ $R_L=1.5\Omega$ $R_{GEN}=3\Omega$		18		ns
Turn-On Rise Time	t_r			20		ns
Turn-Off Delay Time	$t_{d(off)}$			33		ns
Turn-Off Fall Time	t_f			4		ns
Body Diode Reverse Recovery Time	t_{rr}	$I_F=20A$ $dI/dt=500A/\mu s$		26		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$I_F=20A$ $dI/dt=500A/\mu s$		125		nC

- A: The value of $R_{\theta JA}$ is measured with the device in a still air environment with $T_A=25^\circ C$.
- B: The power dissipation PD is based on $T_J(MAX)=150^\circ C$, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.
- C: Repetitive rating, pulse width limited by junction temperature $T_J(MAX)=150^\circ C$.
- D: The $R_{\theta JA}$ is the sum of the thermal impedance from junction to case $R_{\theta JC}$ and case to ambient.
- E: The static characteristics in Figures 1 to 6 are obtained using $<300 \mu s$ pulses, duty cycle 0.5% max.
- F: These curves are based on the junction-to-case thermal impedance which is measured with the device mounted to a large heatsink, assuming a maximum junction temperature of $T_J(MAX)=150^\circ C$.
- G: The maximum current rating is limited by bond-wires.

Electrical Characteristic Curve

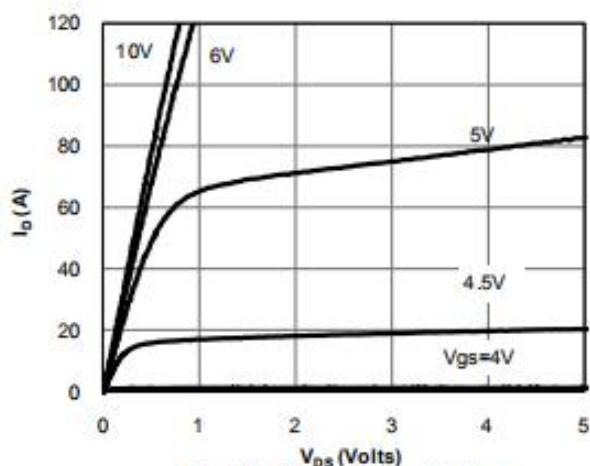


Fig 1: On-Region Characteristics

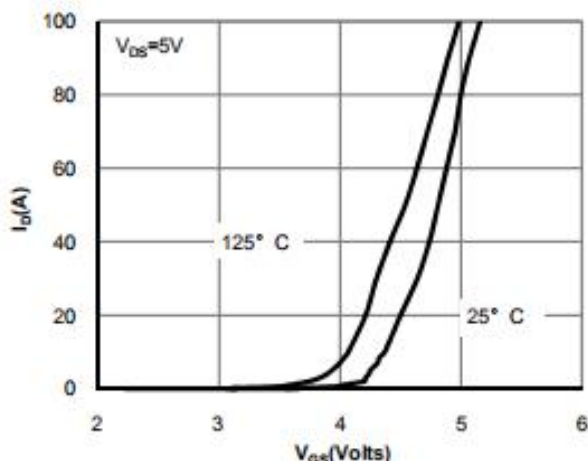


Figure 2: Transfer Characteristics

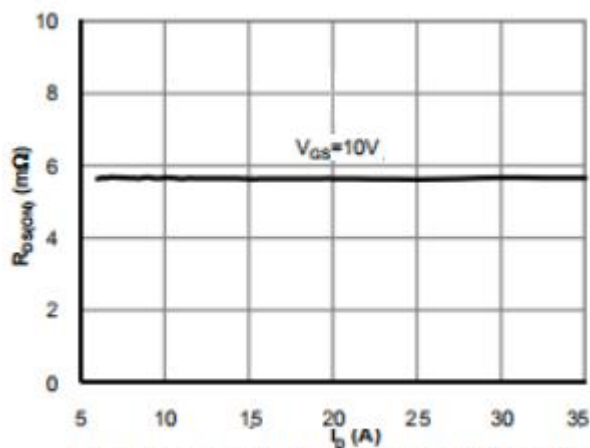


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

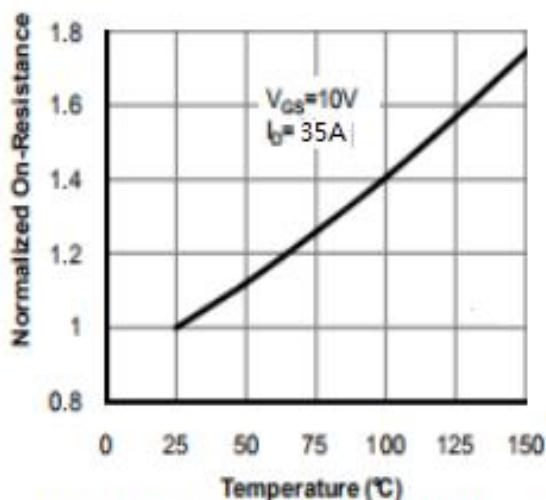


Figure 4: On-Resistance vs. Junction Temperature

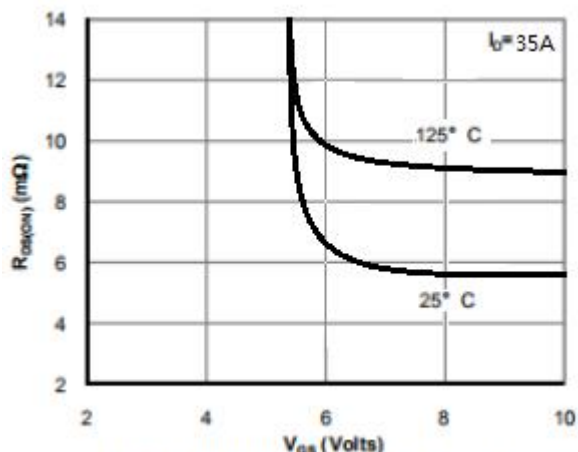


Figure 5: On-Resistance vs. Gate-Source Voltage

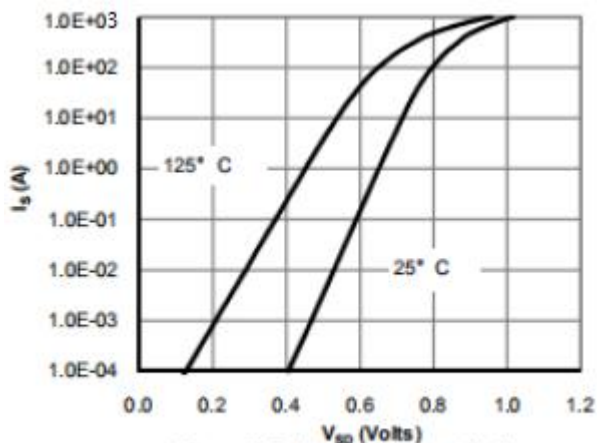
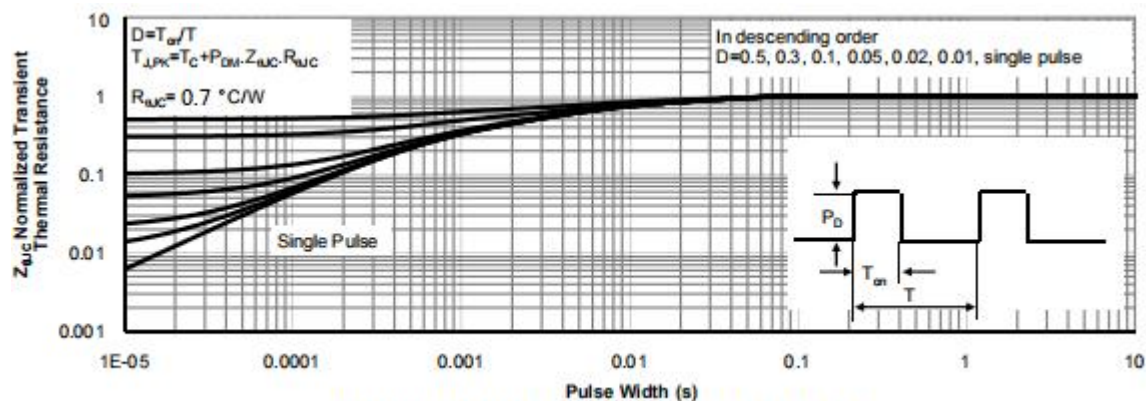
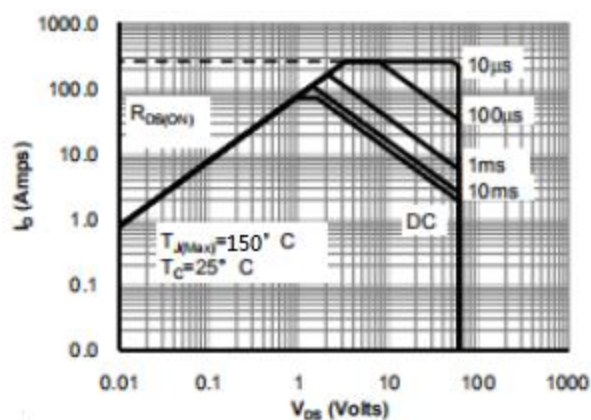
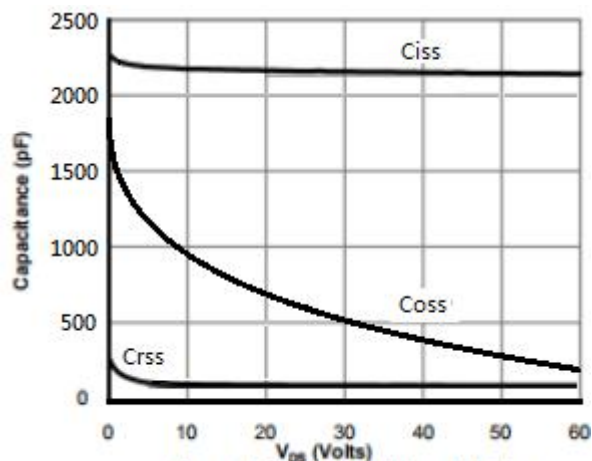
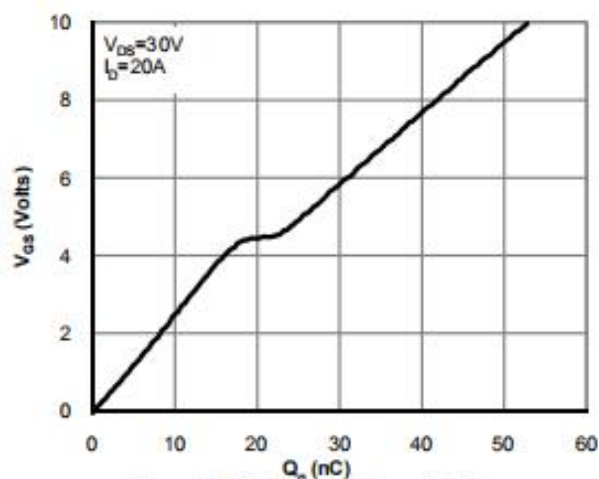


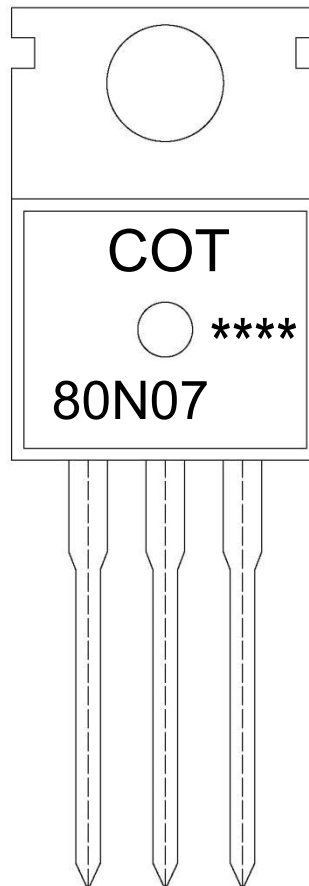
Figure 6: Body-Diode Characteristics

Figure 5: On-Resistance vs. Gate-Source Voltage

Electrical Characteristic Curve



Marking Instructions



Note:

COT: Company Logo.

80N07: Product Type.

****: Lot No. Code, code change with Lot No.

Packaging SPEC.

BULK AND TUBE INFORMATION

Package Type	Units					Dimension (unit: mm ³)		
	Units/Bag	Bags/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Bag	Inner Box	Outer Box
TO-220/F	200	10	2,000	5	10,000	135×190	237×172×102	560×245×195

Package Type	Units					Dimension (unit: mm ³)		
	Units/Tube	Tubes/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Tube	Inner Box	Outer Box
TO-220/F	50	20	1,000	5	5,000	532×31.4×5.5	555×164×50	575×290×180

Package Outline Dimensions

T0-220

单位: mm

