Descriptions

This 70V,80A N-Channel MOSFET in a TO-263 Plastic Package.

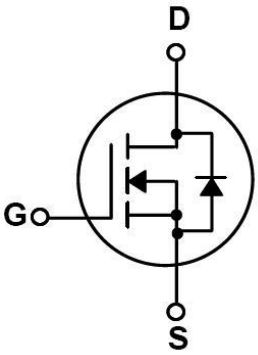
Features

- Low RDS(on)
- Low Gate Charge
- Fast Switching
- Halogen-free Product

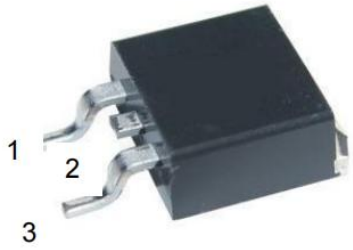
Applications

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

Equivalent Circuit



Pinning



Pin1:Gate Pin2:Drain Pin3:Source

Absolute Maximum Ratings(Ta=25℃)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	70	V
Drain Current[G]		I_D(Tc=25℃)	80	A
		I_D(Tc=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(Tc=25℃)	175	W
		P_D(Tc=100℃)	67	W
Operating and Storage Temperature Range		T_J,T_{STG}	-55 to 150	℃
Maximum Junction-to-Ambient[A]	Steady-State	$R_{\theta JA}$	62	℃/W
Maximum Junction-to-Case[B]	Steady-State	$R_{\theta JC}$	0.7	℃/W

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V	I_D=250μA	70			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=70V	V_{GS}=0V			1	μA
		V_{DS}=70V	T_J=55℃			5	
Gate-Body Leakage Current Forward	I_{GSS}	V_{GS}=±20V	V_{DS}=0V			100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}	I_D=250μA	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℃)

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=1.5Ω R_{GEN}=3Ω		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/μs		26		ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=20A dI/dt=500A/μs		125		nC

A: The value of $R_{\theta JA}$ is measured with the device in a still air environment with T_A =25°C.
B. The power dissipation PD is based on TJ(MAX)=150°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°C.
D. The $R_{\theta JA}$ is the sum of the thermal impedence from junction to case $R_{\theta JC}$ and case to ambient.
E. The static characteristics in Figures 1 to 6 are obtained using <300 μs pulses, duty cycle 0.5%max.
F. These curves are based on the junction-to-case thermal impedence which is measured with the device mounted to a large heatsink, assuming a maximum junction temperature of $T_{J(MAX)}$=150°C.
G. The maximum current rating is limited by bond-wires.

Electrical Characteristic Curve

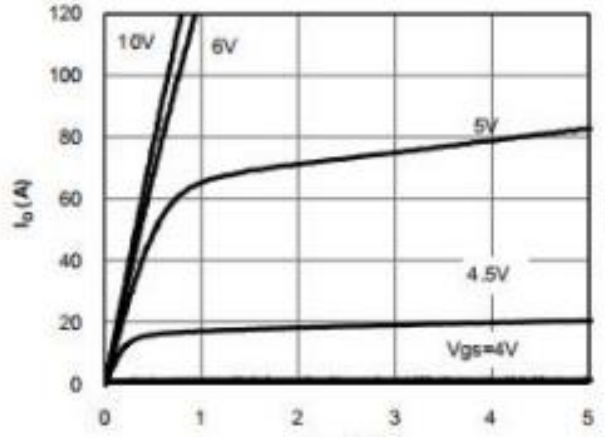


Fig 1: On-Region Characteristics

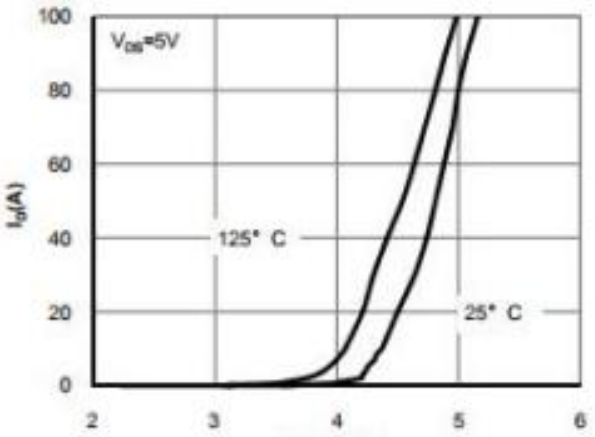


Figure 2: Transfer Characteristics

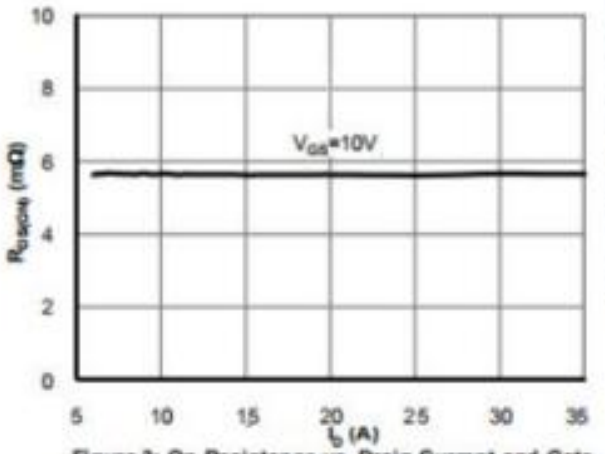


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

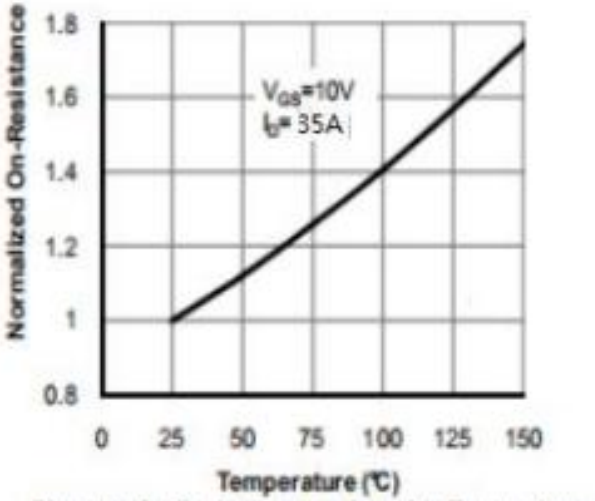


Figure 4: On-Resistance vs. Junction Temperature

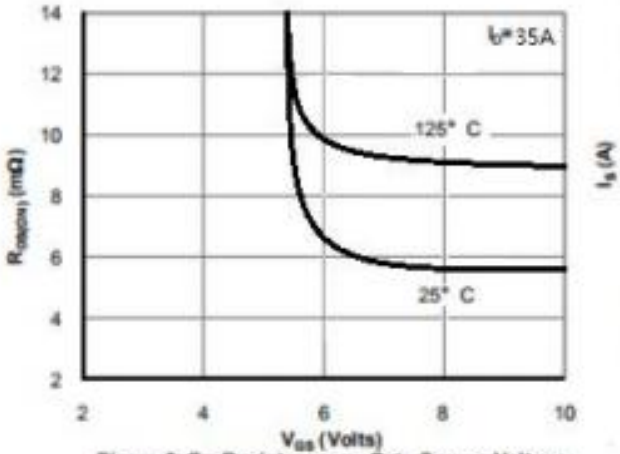


Figure 5: On-Resistance vs. Gate-Source Voltage

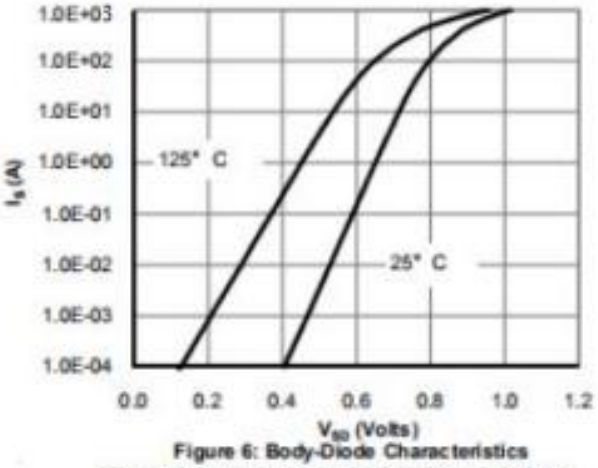


Figure 6: Body-Diode Characteristics

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

Electrical Characteristic Curve

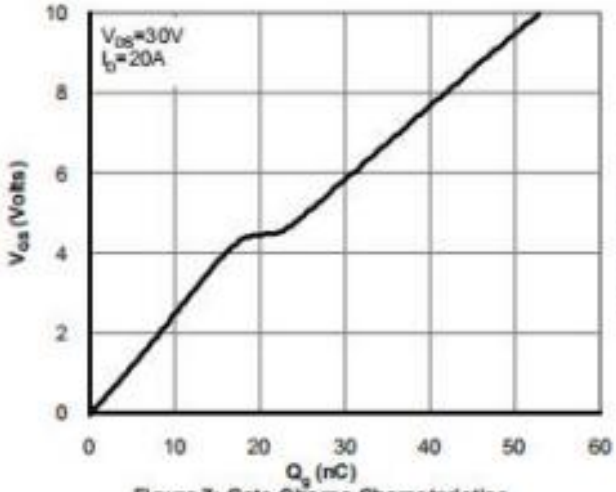


Figure 7: Gate-Charge Characteristics

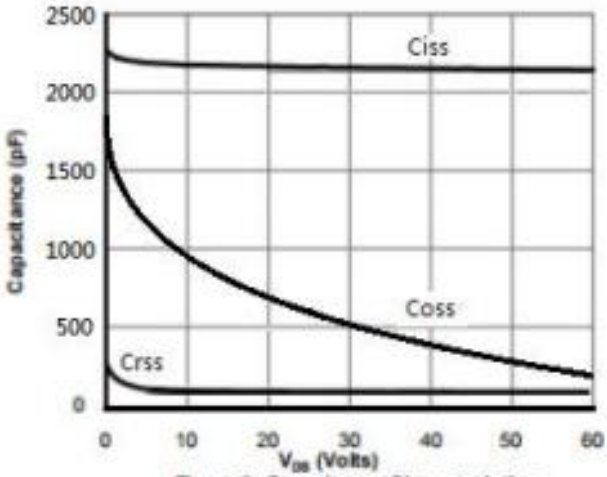


Figure 8: Capacitance Characteristics

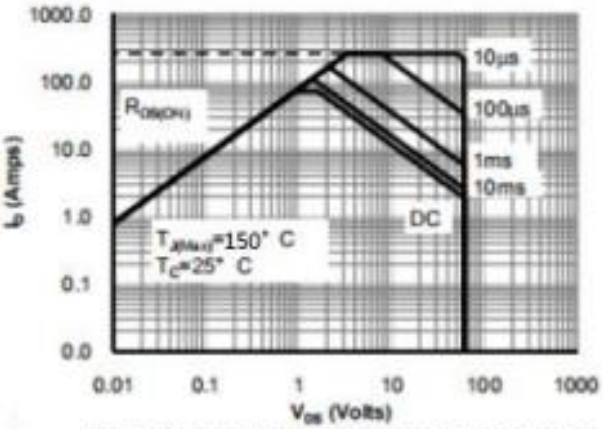


Figure 9: Maximum Forward Biased Safe Operating Area

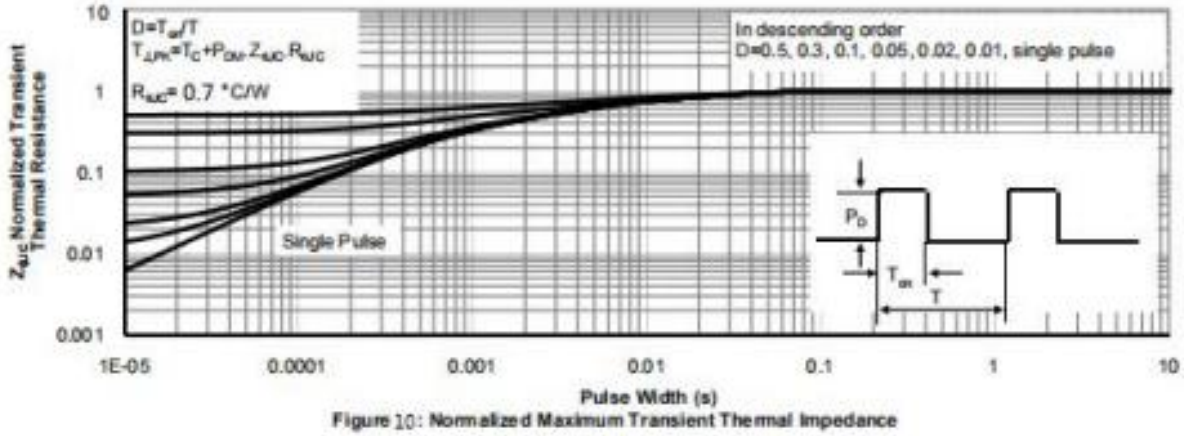
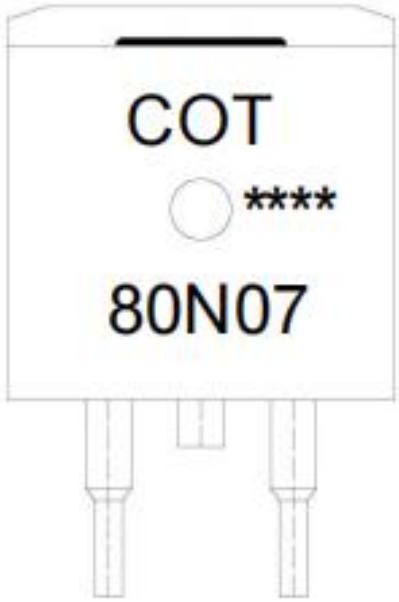


Figure 10: Normalized Maximum Transient Thermal Impedance

Marking Instructions



Note:

COT:	Company Code
80N07:	Product Type.
****:	Lot No. Code, code change with Lot No.

Packaging SPEC

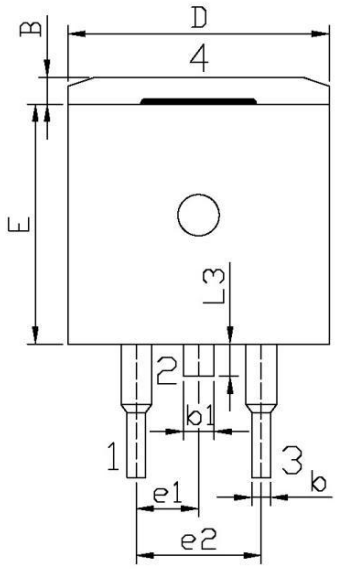
REEL INFORMATION

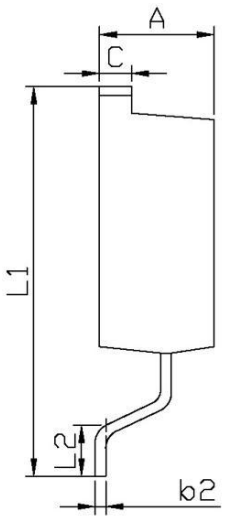
Package Type	Units					Dimension (unit：mm³)		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
TO-263	800	1	800	5	4,000	13″ ×24	360×360×50	385×257×392

TUBE INFORMATION

Package Type	Units					Dimension (unit：mm³)		
	Units/Tube	Tubes/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Tube	Inner Box	Outer Box
TO-263	50	20	1,000	5	5,000	532×33×7.0	555×164×50	575×290×180

Package Outline Dimensions





单位：mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	4.30	4.70	E	9.00	9.40
B	1.00	1.40	e1	2.34	2.74
b	0.70	0.90	e2	4.88	5.28
b1	1.15	1.35	L1	15.00	16.00
b2	0.40	0.60	L2	2.24	2.84
C	1.20	1.40	L3	1.20	1.60
D	9.80	10.20			

TO-263