

■ PRODUCT CHARACTERISTICS

VDSS	30V
$R_{DS(on)typ.} (@V_{GS} = 10\text{ V})$	4mΩ
$R_{DS(on)typ.} (@V_{GS} = 4.5\text{ V})$	7mΩ
ID	80A

■ APPLICATIONS

This is suitable for the most demanding DC-DC converter application where high efficiency is to be achieved.

■ FEATURES

- * Fast switching capability
- * Avalanche energy tested
- * Improved dv/dt capability, high ruggedness

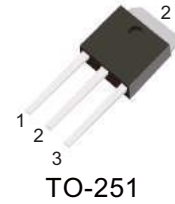
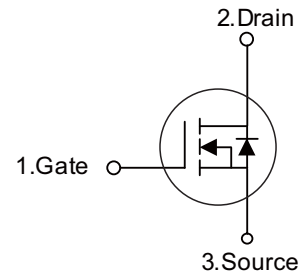
■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT80N03XD	TO-252	2500 pieces /Reel
N/A	MOT80N03XC	TO-251	70 pieces/Tube

■ ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	80	A
Pulsed Drain Current (Note 2)	I_{DM}	160	A
Avalanche Energy	E_{AS}	205	mJ
Peak Diode Recovery dv/dt (Note 3)	dv/dt	4.8	V/ns
Power Dissipation	P_D	78	W
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Symbol



■ ELECTRICAL CHARACTERISTICS ($T_C=25^{\circ}\text{C}$, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Static parameters						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	30	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	-	-	1	μA
		V _{DS} =30V, V _{GS} =0V, T _J =125°C	-	-	250	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
On characteristics						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1.0	-	3.0	V
Static Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A	-	4	6	mΩ
		V _{GS} =4.5V, I _D =10A	-	7	8.5	mΩ
Dynamic parameters						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =15V, f=1.0MHz	-	1700	-	pF
Output Capacitance	C _{OSS}		-	185	-	pF
Reverse Transfer Capacitance	C _{RSS}		-	140	-	pF
Switching parameters						
Total Gate Charge (Note 1)	Q _G	V _{DS} =15V, V _{GS} =10V, I _D =15A, I _G =1mA(Note 1, 2)	-	98	-	nC
Gate to Source Charge	Q _{GS}		-	10	-	nC
Gate to Drain Charge	Q _{GD}		-	16	-	nC
Turn-ON Delay Time (Note 1)	t _{D(ON)}	V _{DD} =15V, V _{GS} =10V, I _D =15A, R _G =3Ω(Note 1, 2)	-	30	-	ns
Turn-ON Rise Time	t _R		-	20	-	ns
Turn-OFF Delay Time	t _{D(OFF)}		-	85	-	ns
Turn-OFF Fall-Time	t _F		-	28	-	ns
Source-drain diode ratings and characteristics						
Maximum Body-Diode Continuous Current	I _S		-	-	80	A
Pulsed Source Current	I _{SM}		-	-	160	A
Diode Forward Voltage (Note 1)	V _{SD}	I _S =80A, V _{GS} =0V	-	-	1.4	V
Body Diode Reverse Recovery Time	t _{rr}	I _F =30A, dI/dt=100A/μs	-	84	-	ns
Body Diode Reverse Recovery Charge	Q _{rr}	(Note 1, 2)	-	80	-	nC

Notes: 1. Pulse test; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

2. Essentially independent of operating temperature.

■ TYPICAL CHARACTERISTICS

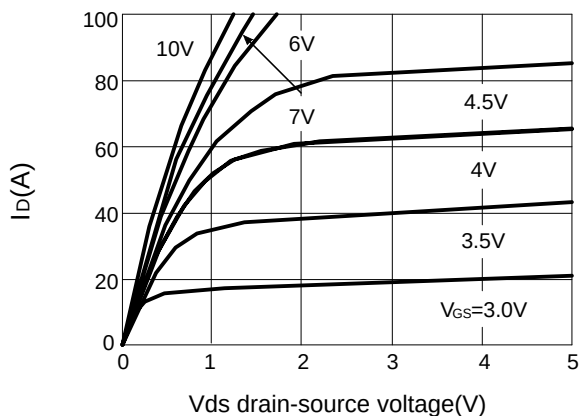


Figure 1: Output characteristics

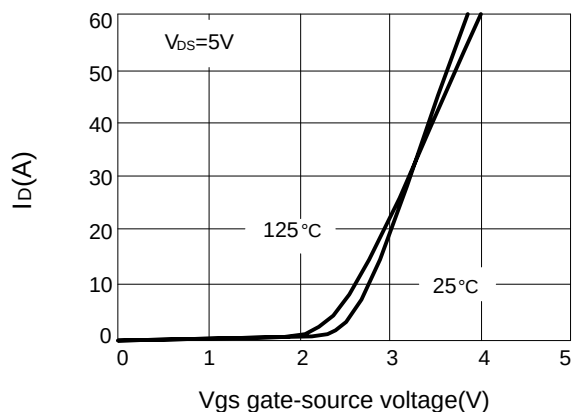


Figure 2: Transfer characteristics

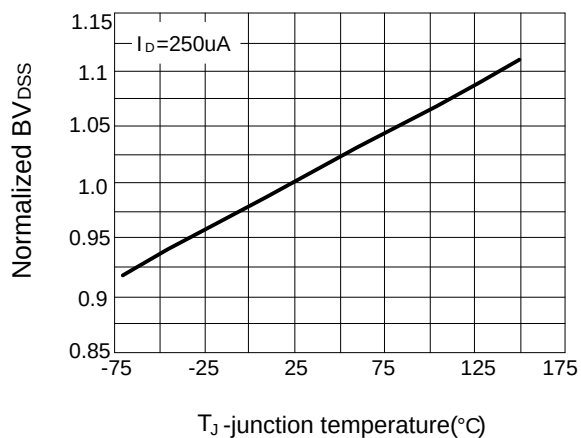


Figure 3: BV_{DS} vs. junction temperature

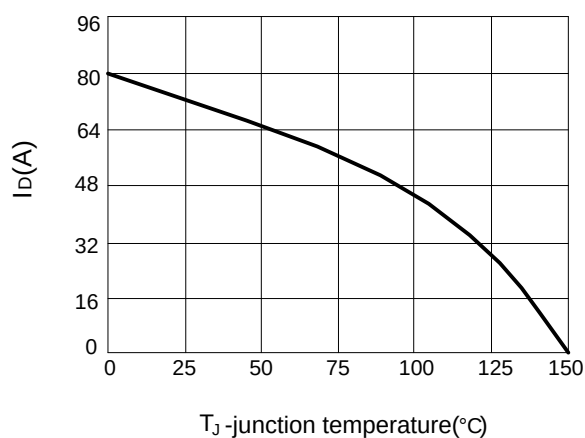


Figure 4: Drain current

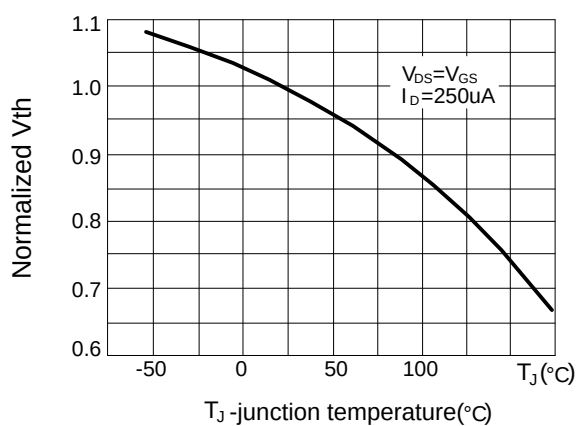


Figure 5: $V_{GS(th)}$ vs. junction temperature

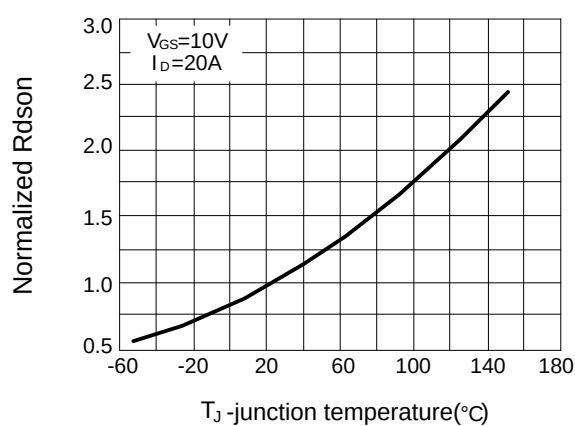


Figure 6: $R_{DS(on)}$ vs. junction temperature

■ TYPICAL CHARACTERISTICS(Cont.)

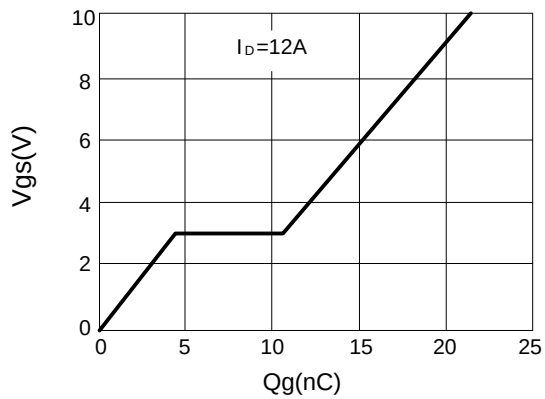


Figure 7: Gate charge waveforms

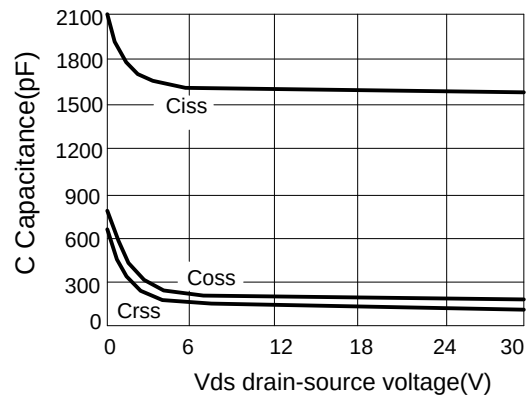


Figure 9: Body-diode characteristics

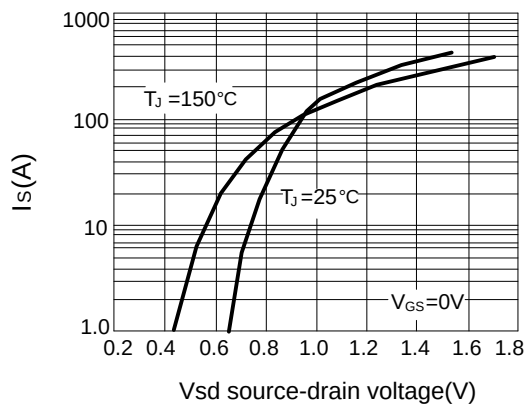


Figure 9: Body-diode characteristics

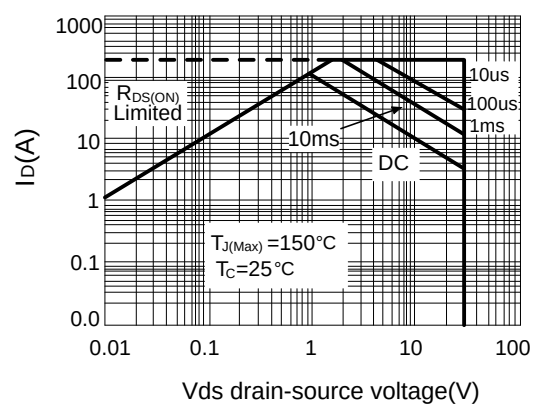
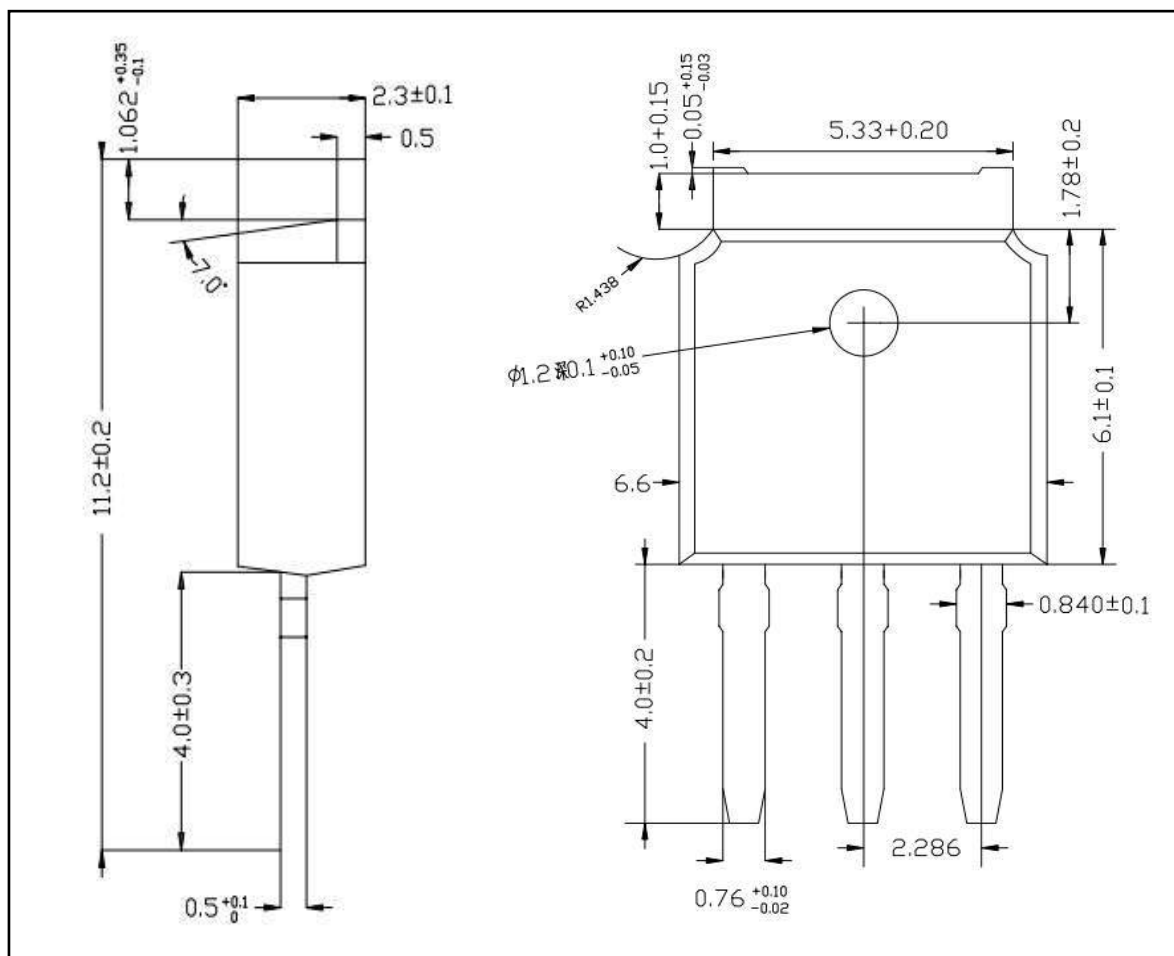


Figure 10: Safe operating area

■ TO-251 PACKAGE OUTLINE DIMENSIONS



■ TO-252 PACKAGE OUTLINE DIMENSIONS

