UMW IPB065N10N3G

100V N-Channel MOSFET

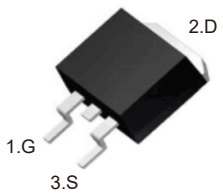
1.Features

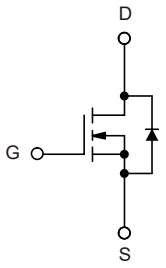
- $V_{DS\ (V)}$=100V
- I_D=80A
- $R_{DS(ON)}$<5.9mΩ(V_{GS}=10V)
- Ideal for high-frequency switching and synchronous rectification
- Very low on-resistance $R_{DS(ON)}$
- 175 °C operating temperature
- Pb-free lead plating
- Excellent gate charge x $R_{DS(ON)}$ product (FOM)

2.Pinning information

Pin	Symbol	Description
1	G	GATE
2	D	DRAIN
3	S	SOURCE

TO-263





3.Absolute Maximum Ratings T_J= 25°C

Parameter	Symbol	Conditions	Min.	Max.	Units
Continuous drain current	I_D	T_C=25°C [1]		80	A
		T_C=100°C		73	A
Pulsed drain current [1]	$I_{D,pulse}$	T_C=25°C		320	A
Avalanche current, single pulse	E_{AS}	I_D=80A, R_{GS}=25Ω		160	mJ
Gate source voltage	V_{GS}		-20	20	V
Power dissipation	P_{tot}	T_C=25°C		150	W
storage temperature	T_J,T_{STG}		-55	175	°C

4.Thermal resistance rating

Parameter	Symbol	Max	Units
Thermal resistance, junction -case	R_{thJC}	1	K/W
Thermal resistance, junction -ambient,minimal footprint	R_{thJA}	62	K/W
Thermal resistance,junction -ambient.6 cm' cooling area [2)]	R_{thJA}	40	K/W

5.Electrical Characteristic (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=1mA	100			V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=90μA	2	2.7	3.5	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=100V, V_{GS}=0V, T_J=25°C		0.1	1	μA
		V_{DS}=100V, V_{GS}=0V, T_J=125°C		10	100	μA
Gate-source leakage current	I_{GSS}	V_{GS}=20V, V_{DS}=0V		1	100	nA
Drain-source on-state resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=80A		5.9	6.5	mΩ
		V_{GS}=6V, I_D=40A		7.3	12.4	mΩ
Gate resistance [1)]	R_G			1.6	2.4	Ω
Transconductance	g_{FS}	$\|V_{DS}\|>2\|I_D\|R_{DS(ON)max}$,$I_D$=80 A	50	99		S
Input capacitance	C_{iss}	V_{GS}=0V, V_{DS}=50V, f=1MHz		3690	4910	pF
Output capacitance	C_{oss}			646	859	pF
Reverse transfer capacitance	C_{rss}			25	44	pF
Turn-on delay time	$t_{D(on)}$	V_{DD}=50V, V_{GS}=10V I_D=80A, $R_{G,ext}$=1.6Ω		19		ns
Rise time	t_r			37		ns
Turn-off delay time	$t_{D(off)}$			37		ns
Fall time	t_f			9		ns
Gate to source charge	Q_{gs}	V_{DD}=50V, I_D=80A V_{GS}=0 to 10V		18		nC
Gate to drain charge [1)]	Q_{gd}			10	15	nC
Switching charge	Q_{SW}			16		nC
Gate charge total	Q_g			51	64	nC
Gate plateau voltage	$V_{plateau}$			4.9		V
Output charge [1)]	Q_{oss}	V_{DD}=50V, V_{GS}=0V		68	91	nC

Diode continuous forward current	I_S	T_C=25°C			80	A
Diode pulse current	$I_{S,pulse}$	T_C=25°C			320	A
Diode forward voltage	V_{SD}	V_{GS}=0V, I_F=80A, T_J=25°C		1	1.2	V
Reverse recovery time [1)]	t_{rr}	V_R=50V, I_F=I_S, di_F/dt=100A/μs		73	146	ns
Reverse recovery charge [1)]	Q_{rr}	V_R=50V, I_F=I_S, di_F/dt=100A/μs		139	278	nC

6.1Typical characteristic

$P_{tot}=f(T_C)$

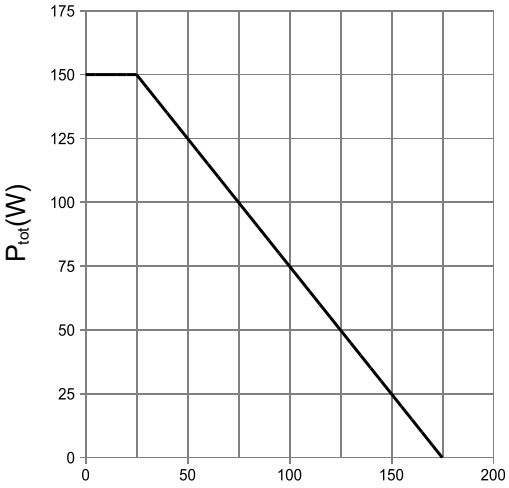


Fig 1. Power dissipation

$I_D=f(T_C)$; $V_{GS}\geq 10V$

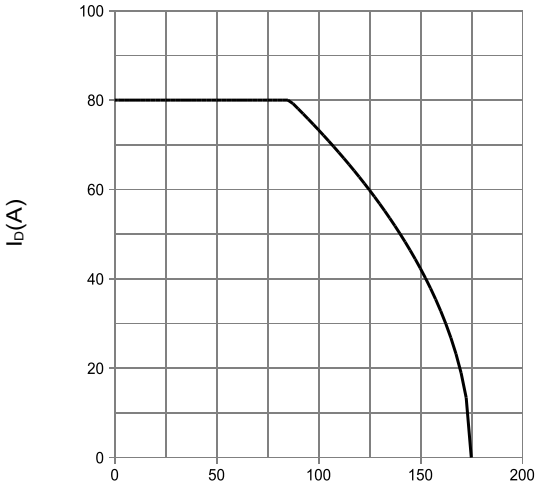


Fig 2. Drain current

ID=f(V_{DS}); T_C=25°C; D=0; parameter: t_p

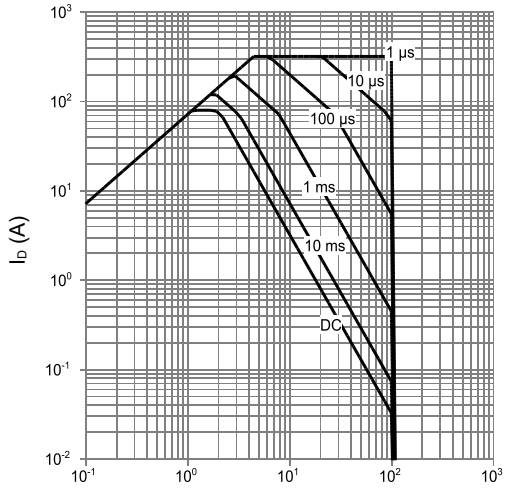


Fig 3. Safe operating area

$Z_{thJC}=f(t_p)$; parameter: $D=t_p/T$

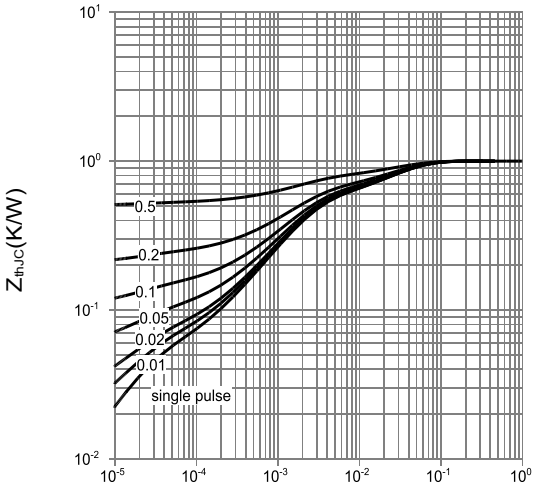


Fig 4. Max transient thermal impedance

6.2Typical characteristic

$I_D=f(V_{DS})$; T_J=25°C; parameter: V_{GS}

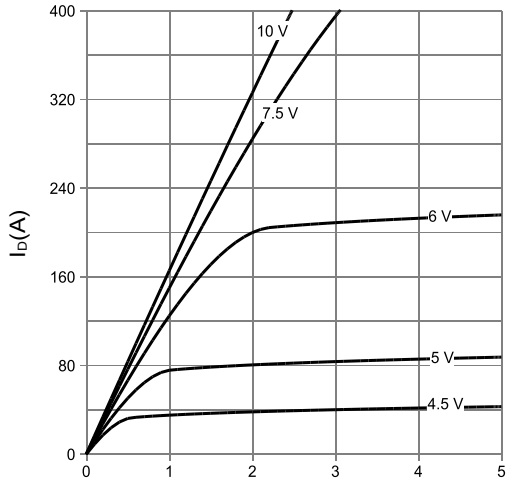


Fig 5. output characteristics

$R_{DS(ON)}=f(I_D)$; T_J=25°C; parameter: V_{GS}

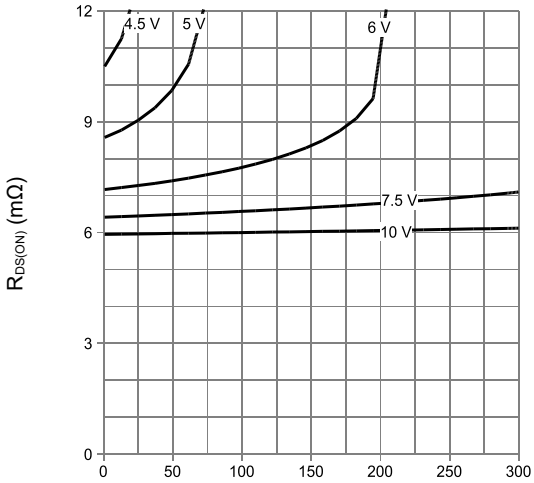


Fig 6. drain-source on resistance

$ID=f(V_{GS})$; $|V_{DS}|>2|$ I_D $|R_{DS(ON)max}$; parameter: T_J

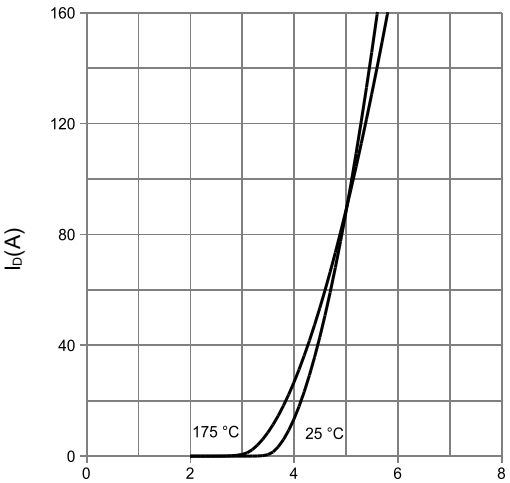


Fig 7. transfer characteristics

$g_{fs}=f(I_D)$; T_J=25°C

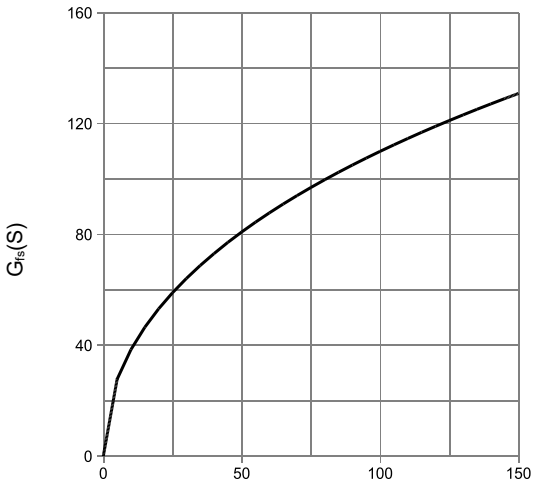


Fig 8. forward transconductance

6.3Typical characteristic

$R_{DS(ON)}=f(T_J)$; I_D=80A; V_{GS}=10V

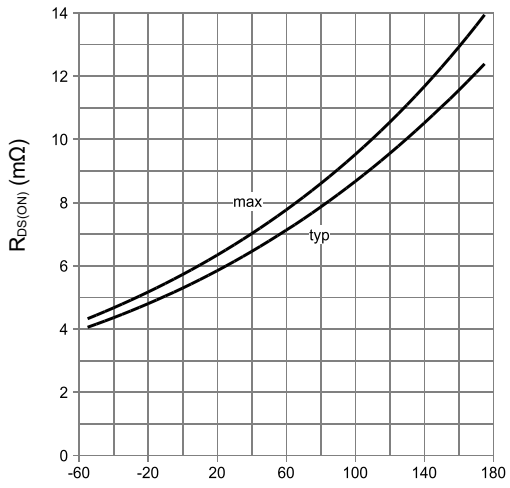


Fig 9. Drain-source on-state resistance

$V_{GS(th)}=f(T_J)$;$V_{GS}=V_{DS}$; parameter: I_D

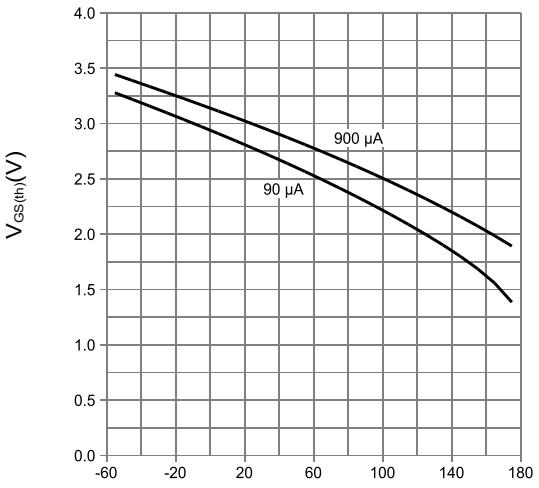


Fig 10. Tgate threshold voltage

C=f(V_{DS}); V_{GS}=0V; f=1MHZ

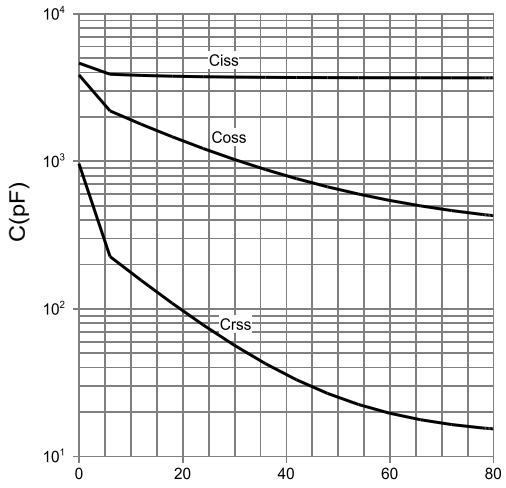


Fig 11. capacitances

$I_F=f(V_{SD})$; parameter: T_J

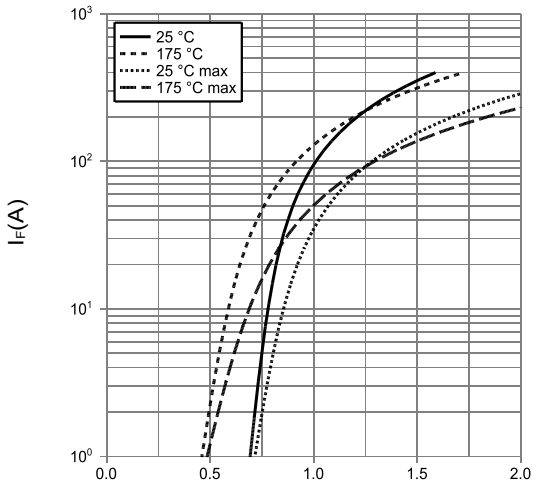


Fig 12. Forward characteristics of reverse diode

6.4Typical characteristic

$I_{AS}=f(t_{AV})$; $R_{GS}=25\Omega$; parameter: $T_{j(start)}$

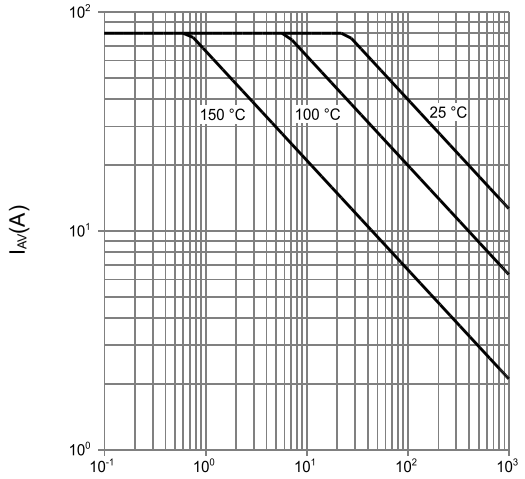


Fig 13. Avalanche characteristics

$V_{GS}=f(Q_{gate})$; $I_D=80A$pulsed; parameter: V_{DD}

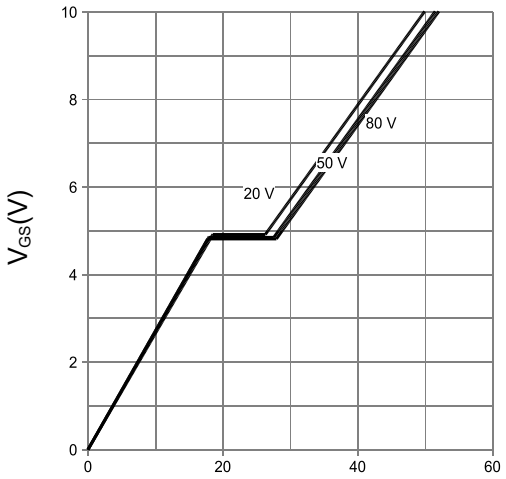


Fig 14. gate charge

$V_{BR(DSS)}=f(T_J)$; I_D=1m A

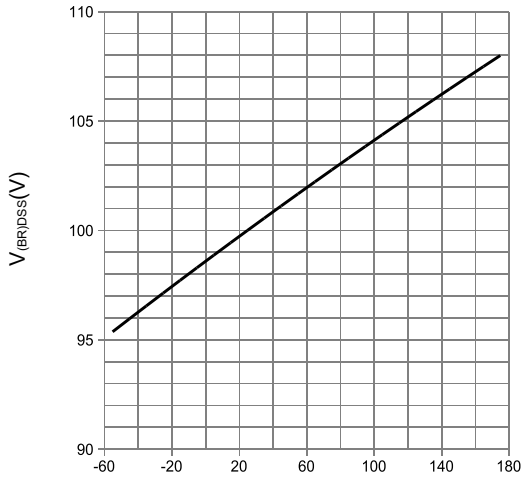


Fig 15. drai source breakdown voltage

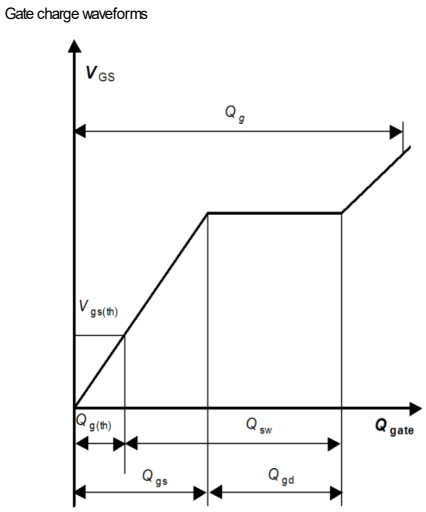
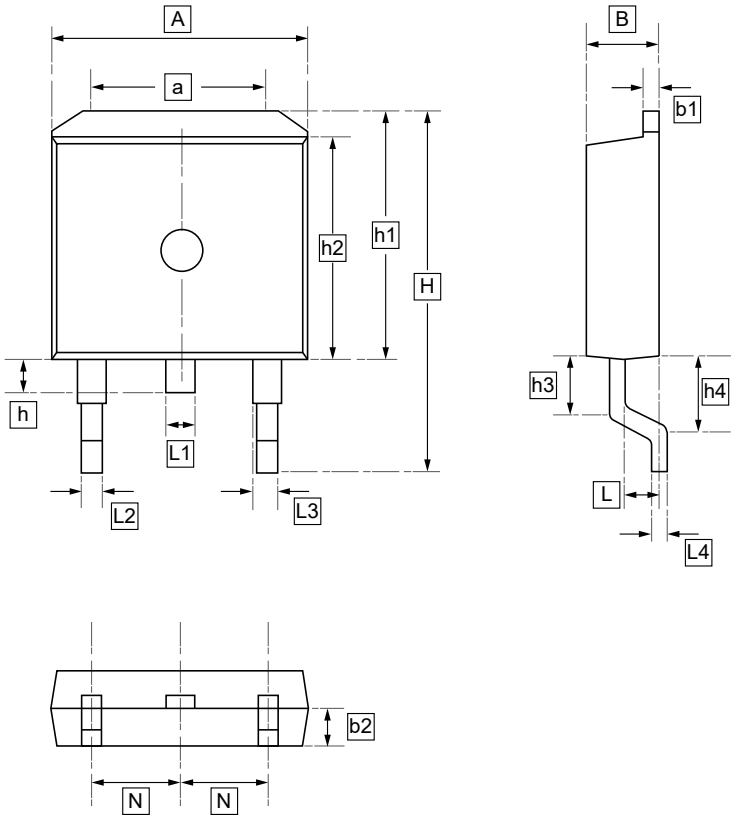


Fig 16. Gate charge waveforms

7.TO-263 Package Outline Dimensions

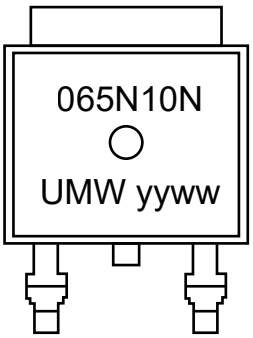


DIMENSIONS (mm are the original dimensions)

Symbol	A	a	B	b1	b2	H	h	h1	h2	h3	h4	L	L1	L2	L3
Min	9.6	7.2	4.3	1.25	2.2	15.2	1.34	10.3	9.1	1.34	2.5	2.2	1.2	0.7	1.2
Max	10.0	7.6	4.7	1.35	2.6	15.8	1.74	10.7	9.3	1.74	2.9	2.6	1.4	0.9	1.4

Symbol	L4	N
Min	0.4	2.4
Max	0.6	2.5

8.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW IPB065N10N3G	TO-263	800	Tape and reel

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