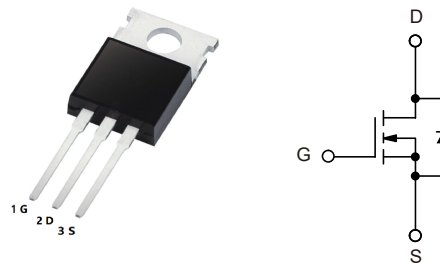


1.Features

- $V_{DS(V)}=100V$
- $I_D=137A$
- $R_{DS(ON)}<4.5m\Omega(V_{GS}=10V)$
- Ideal for high-frequency switching and synchronous rectification
- Very low on-resistance $R_{DS(ON)}$
- 175 °C operating temperature
- Pb-free lead plating
- RoHS compliant

2.Pinning information

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



3.Absolute Maximum Ratings $T_A=25^{\circ}C$

Parameter	Symbol	Conditions	Min.	Max.	Units
Continuous drain current	I_D	$T_C=25^{\circ}C$ ¹⁾		137	A
		$T_C=100^{\circ}C$		105	A
Pulsed drain current ¹⁾	$I_{D,pulse}$	$T_C=25^{\circ}C$		548	A
Avalanche current, single pulse	E_{AS}	$I_D=100A, R_{GS}=25\Omega$		340	mJ
Gate source voltage	V_{GS}		-20	20	V
Power dissipation	P_{tot}	$T_C=25^{\circ}C$		214	W
storage temperature	T_J, T_{STG}	IEC climatic category; DIN IEC 68-1: 55/175/56	-55	175	$^{\circ}C$



4.Thermal resistance rating

Parameter	Symbol	Max	Units
Thermal resistance, junction -case	R_{thJC}	0.7	K/W
Thermal resistance, junction -ambient,minimal footprint	R_{thJA}	62	K/W
Thermal resistance,junction -ambient.6 cm' cooling area ²⁾	R_{thJA}	50	K/W



5. Electrical Characteristic ($T_c=25^\circ\text{C}$ 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	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=150\mu A$	2	2.7	3.5	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V, T_J=25^\circ\text{C}$		0.1	1	μA
		$V_{DS}=100V, V_{GS}=0V, T_J=125^\circ\text{C}$		10	100	μA
Gate-source leakage current	I_{GSS}	$V_{GS}=20V, V_{DS}=0V$		1	100	nA
Drain-source on-state resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=100A$		3.9	4.5	m Ω
		$V_{GS}=6V, I_D=50A$		4.7	7.7	m Ω
Gate resistance	R_G			1.4		Ω
Transconductance	g_{FS}	$ V_{DS} >2 I_D R_{DS(ON)max}, I_D=100A$	73	145		S
Input capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=50V, f=1MHz$		6320	8410	pF
Output capacitance	C_{oss}			1210	1610	pF
Reverse transfer capacitance	C_{rss}			41		pF
Turn-on delay time	$t_{D(on)}$	$V_{DD}=50V, V_{GS}=10V$ $I_D=50A, R_G=1.6\Omega$		27		ns
Rise time	t_r			59		ns
Turn-off delay time	$t_{D(off)}$			48		ns
Fall time	t_f			14		ns
Gate to source charge	Q_{gs}	$V_{DD}=50V, I_D=100A$ $V_{GS}=0 \text{ to } 10V$		30	39	nC
Gate to drain charge	Q_{gd}			16		nC
Switching charge	Q_{SW}			27		nC
Gate charge total	Q_g			88	117	nC
Gate plateau voltage	$V_{plateau}$			4.7		V
Output charge	Q_{oss}	$V_{DD}=50V, V_{GS}=0V$		122	162	nC



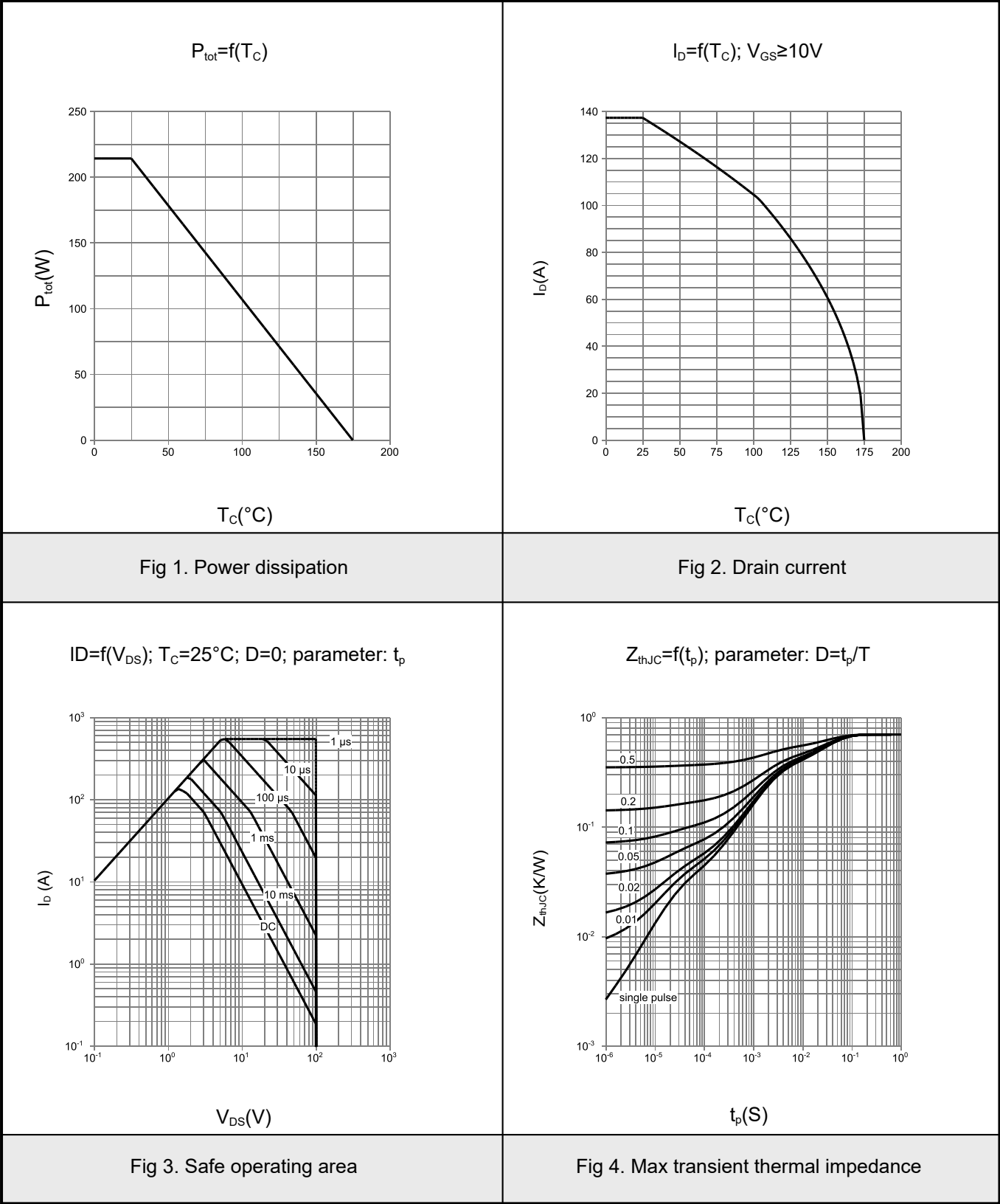
Diode continuous forward current	I_S	$T_C=25^{\circ}\text{C}$			137	A
Diode pulse current	$I_{S,pulse}$	$T_C=25^{\circ}\text{C}$			548	A
Diode forward voltage	V_{SD}	$V_{GS}=0\text{V}, I_F=100\text{A}, T_J=25^{\circ}\text{C}$		1	1.2	V
Reverse recovery time	t_{rr}	$V_R=50\text{V}, I_F=I_S, di_F/dt=100\text{A}/\mu\text{s}$		68		ns
Reverse recovery charge	Q_{rr}	$V_R=50\text{V}, I_F=I_S, di_F/dt=100\text{A}/\mu\text{s}$		135		nC

Notes:

- 1) See Diagram 3
- 2) Device on 40 mm x 40 mm x 1.5 mm epoxy PCB FR4 with 6 cm² (one layer, 70 μm thick) copper area for drain connection.
PCB is vertical in still air.

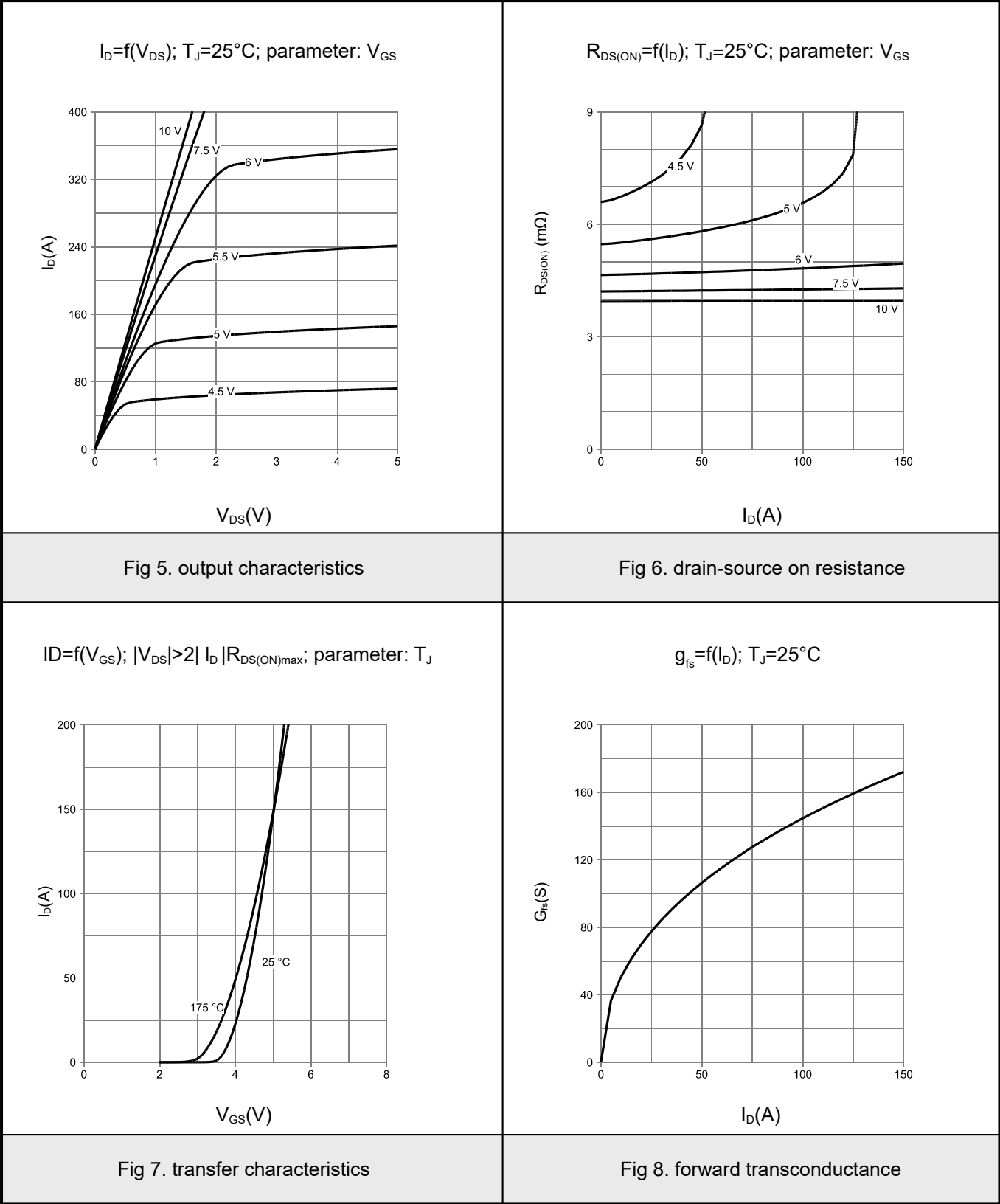


6.1Typical characteristic



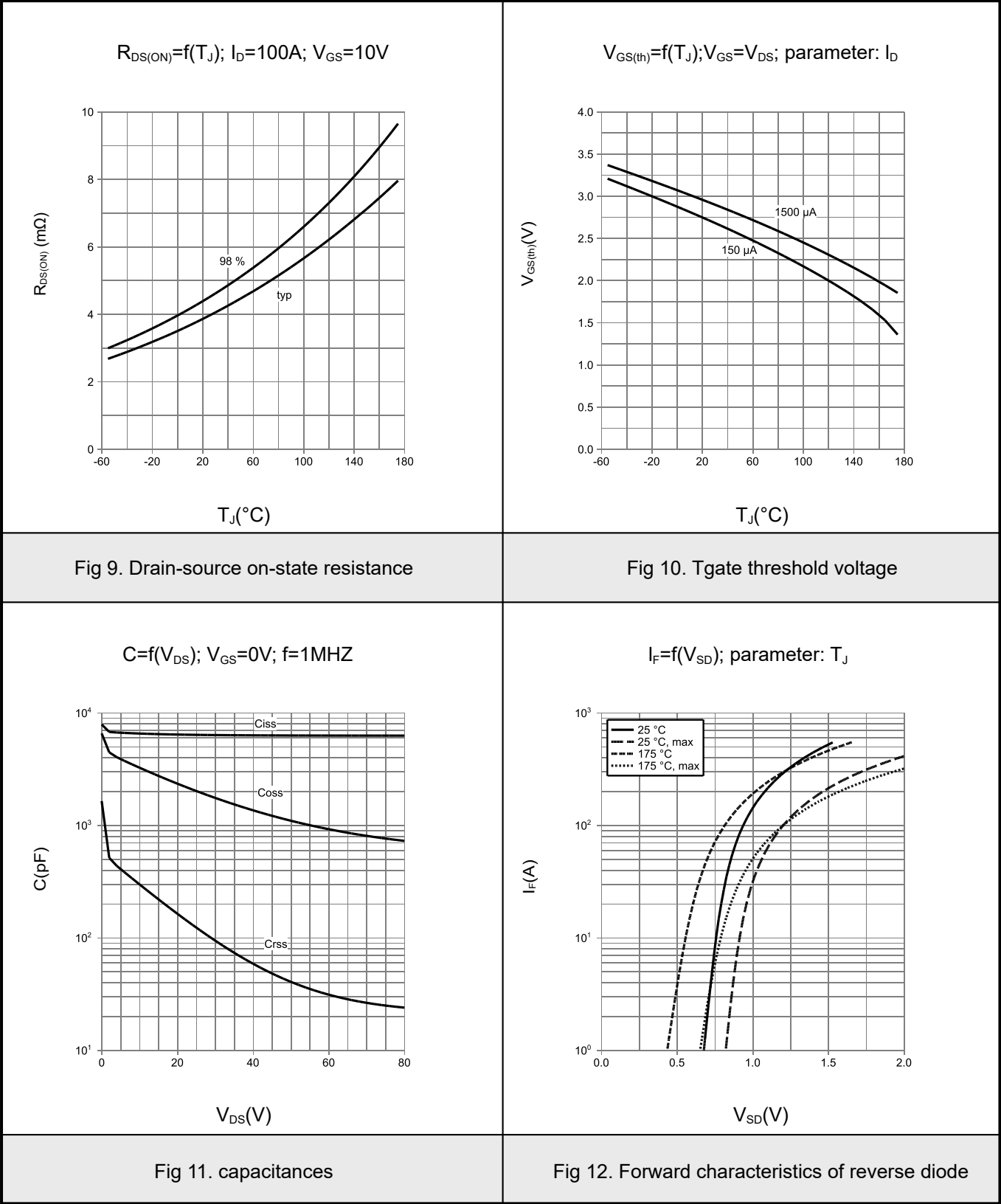


6.2Typical characteristic



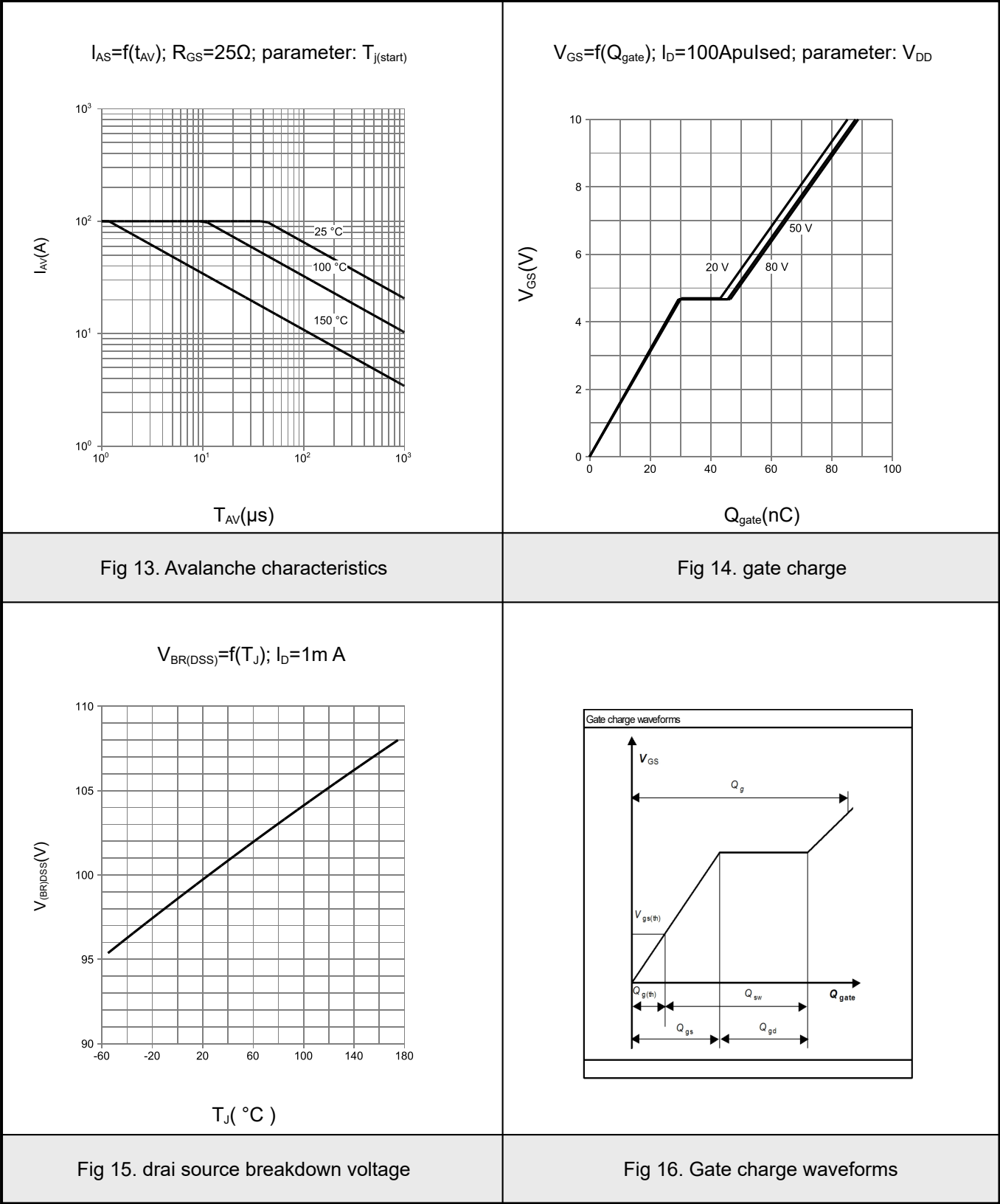


6.3Typical characteristic



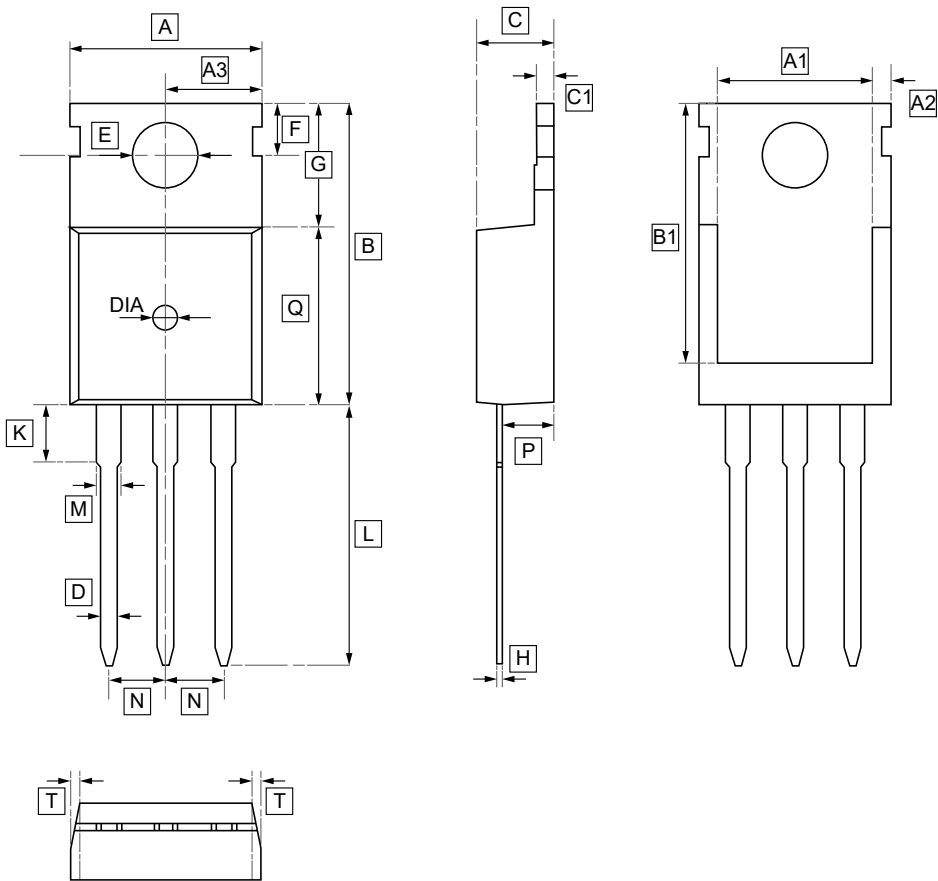


6.4Typical characteristic





7.TO-220 Package Outline Dimensions



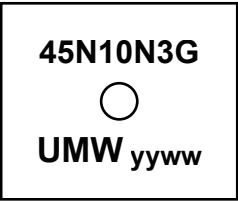
DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	A3	B	B1	C	C1	D	E	F	G
Min	9.7	8.44	1.05	4.8	15.4	12.9	4.28	1.1	0.6	3.4	2.65	5.2
Max	10.3	8.84	1.25	5.2	16.2	13.5	4.68	1.5	1.0	3.8	3.25	5.8

Symbol	H	K	L	L1	M	N	P	Q	T	DIA
Min	0.4	2.9	12.8	2.7	1.15	2.49	2.1	8.7	W:0.35	⌀1.5
Max	0.6	3.3	13.6	3.3	1.35	2.59	2.7	9.3		(deep 0.2)



8.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW IPP045N10N3G	TO-220	1000	Tube and box



9.Disclaimer

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