

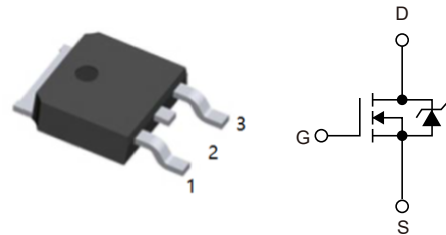
1.Features

- $V_{DS(V)}=60V$
- $I_D=50A$
- $R_{DS(ON)}<10.8m\Omega(V_{GS}=10V)$
- 175°C operating temperature

2.Pinning information

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

TO-252(DPAK)
top view



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

Parameter	Symbol	Conditions	Value	Units
Continuous drain current	I_D	$T_C=25^{\circ}C, V_{GS}=10V$	50 ¹⁾	A
		$T_C=100^{\circ}C, V_{GS}=10V$ ²⁾	49	A
Pulsed drain current ¹⁾	$I_{D,pulse}$	$T_C=25^{\circ}C$	200	A
Avalanche current, single pulse	E_{AS}	$I_D=50A$	240	mJ
Gate source voltage	V_{GS}		± 20	V
Power dissipation	P_D	$T_C=25^{\circ}C$	136	W
Storage temperature	T_J, T_{STG}		-55 to 175	$^{\circ}C$
IEC cimatic category; DIN IEC 68-1			55/175/56	

4.Thermal resistance rating

Parameter	Symbol	Conditions	Max	Units
Thermal resistance, junction -case	R_{thJC}		1.1	K/W
Thermal resistance, junction - ambient, leaded	R_{thJA}		100	K/W
SMD version, device on PCB	R_{thJA}	minimal footprint	75	K/W
		6 cm ² cooling area ³⁾	50	K/W



5. Electrical Characteristic ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=1mA$	60			V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=80\mu A$	2.1	3	4	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=55V, V_{GS}=0V, T_J=25^{\circ}\text{C}$		0.01	1	μA
		$V_{DS}=55V, V_{GS}=0V, T_J=125^{\circ}\text{C}^{2)}$		1	100	μA
Gate-source leakage current	I_{GSS}	$V_{GS}=20V, V_{DS}=0V$		1	100	nA
Drain-source on-state resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=32A$		10.8	14.4	m Ω
Input capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=25V, f=1MHz$		1485		pF
Output capacitance	C_{oss}			464		pF
Reverse transfer capacitance	C_{rss}			167		pF
Turn-on delay time	$t_{D(on)}$	$V_{DD}=30V, V_{GS}=10V$ $I_D=50A, R_G=7.5\Omega$		13		ns
Rise time	t_r			29		ns
Turn-off delay time	$t_{D(off)}$			30		ns
Fall time	t_f			19		ns
Gate to source charge	Q_{gs}	$V_{DD}=44V, I_D=50A$ $V_{GS}=0 \text{ to } 10V$		8	11	nC
Gate to drain charge	Q_{gd}			16	24	nC
Gate charge total	Q_g			39	52	nC
Gate plateau voltage	$V_{plateau}$			5.4		V
Diode continuous forward current ²⁾	I_S	$T_C=25^{\circ}\text{C}$			50	A
Diode pulse current ²⁾	$I_{S,pulse}$				200	A
Diode forward voltage	V_{SD}	$V_{GS}=0V, I_F=50A, T_J=25^{\circ}\text{C}$		1	1.3	V
Reverse recovery time ²⁾	t_{rr}	$V_R=30V, I_F=I_S, di_F/dt=100A/\mu s$		45		ns
Reverse recovery charge ²⁾	Q_{rr}	$V_R=3V, I_F=I_S, di_F/dt=100A/\mu s$		74		nC

Notes:

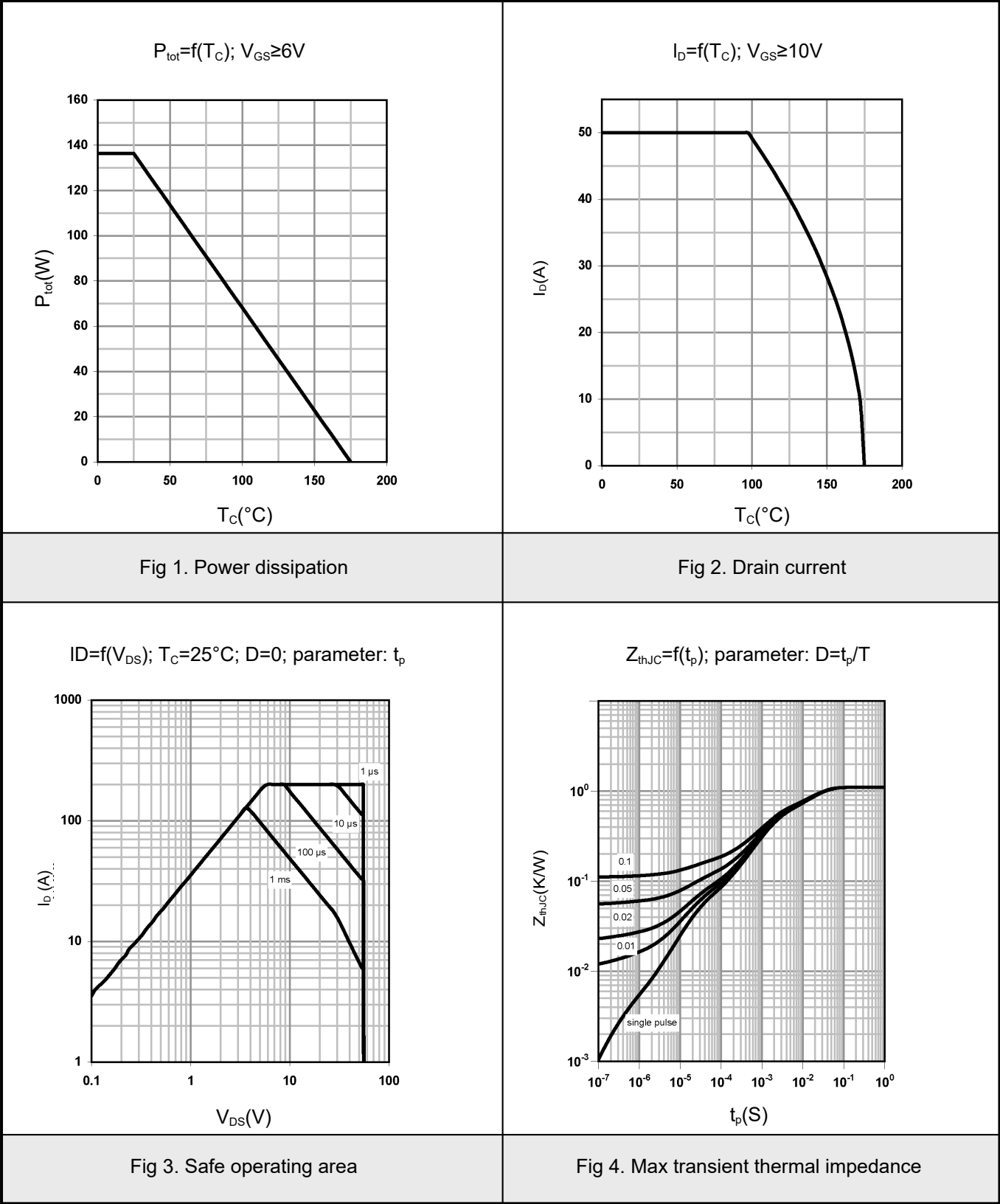
¹⁾ Current is limited by bondwire; with an $R_{thJC}=1.1 \text{ K/W}$ the chip is able to carry 69A.

²⁾ Defined by design. Not subject to production test.

³⁾ 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.

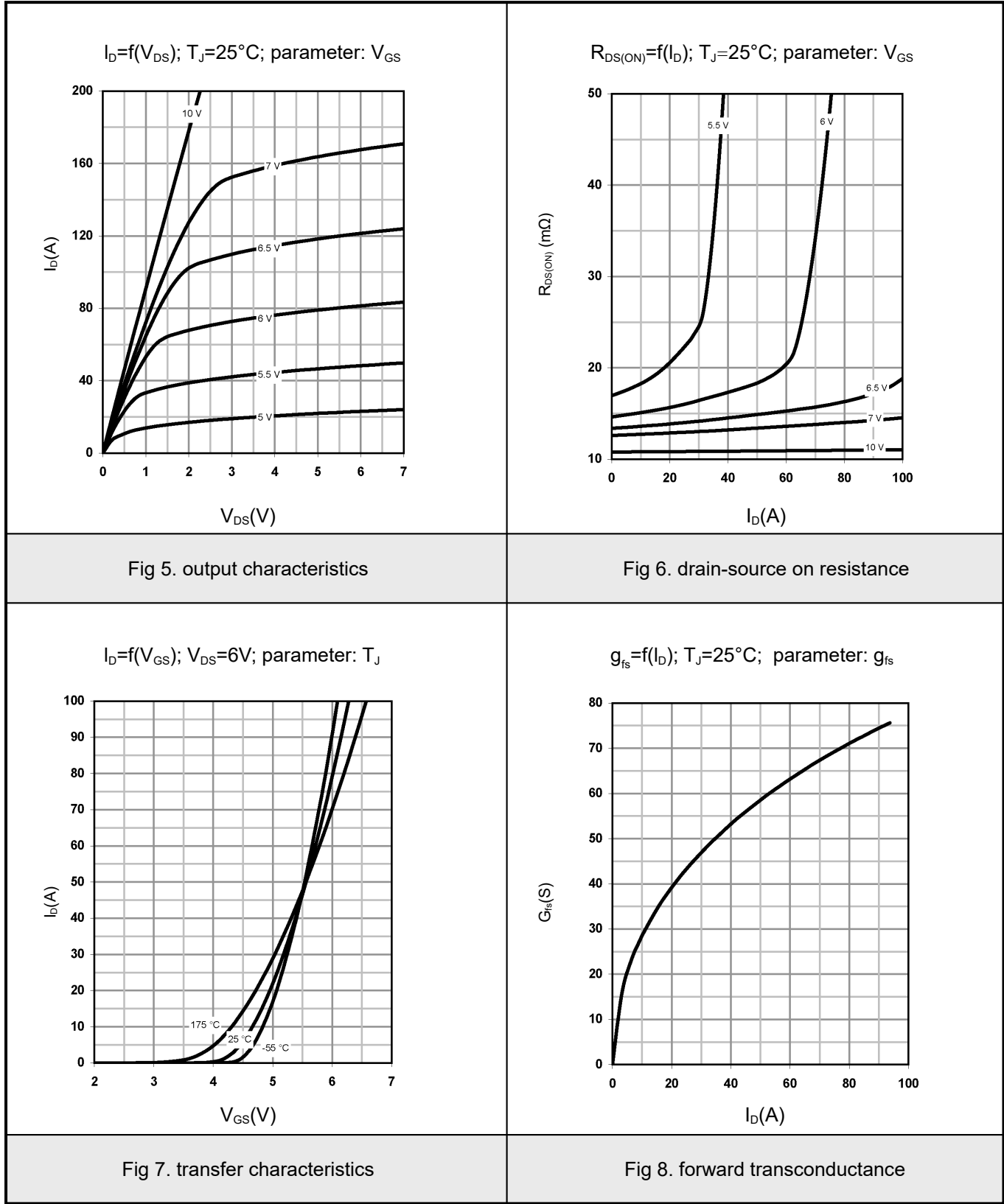


6.1Typical characteristic



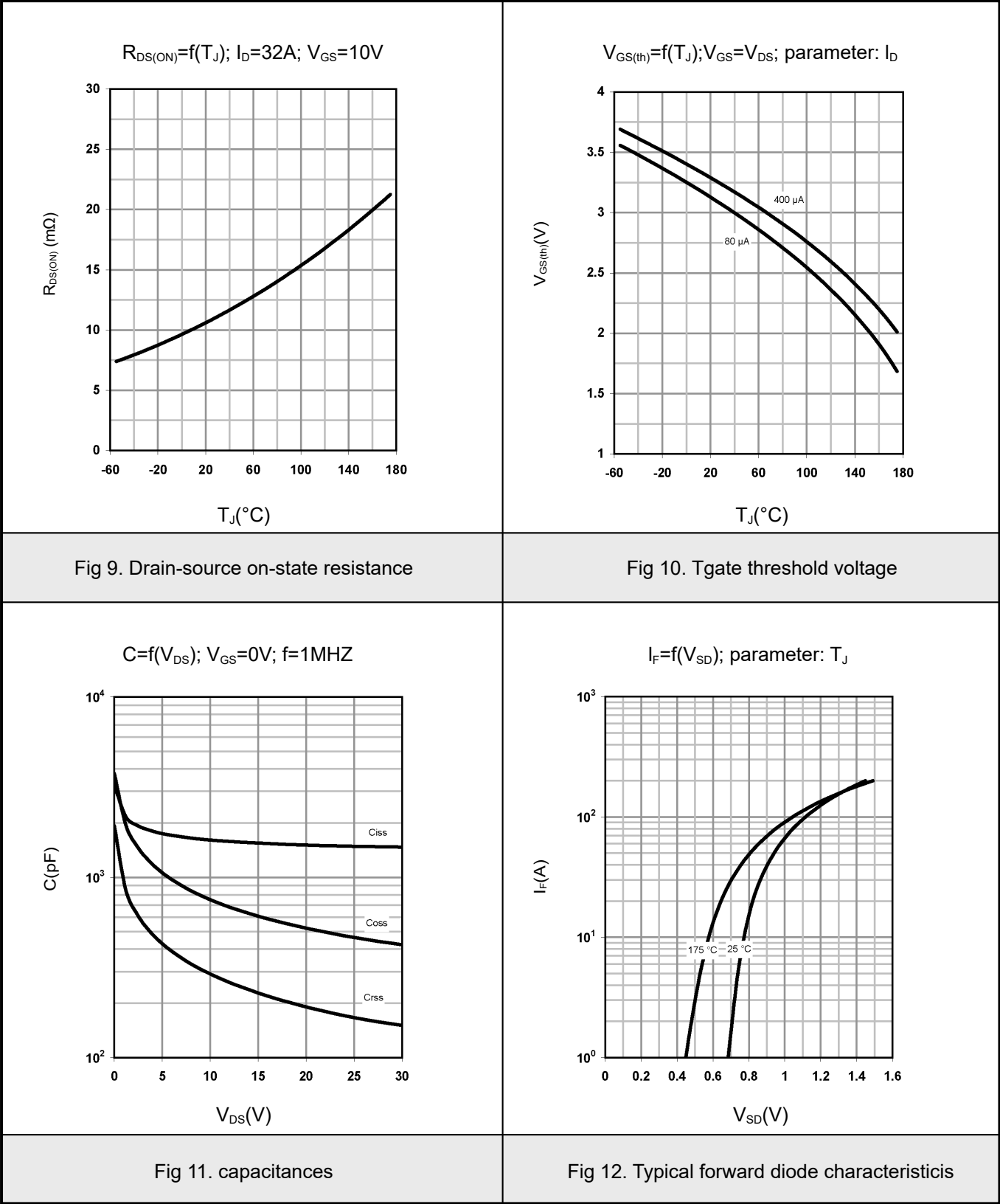


6.2Typical characteristic



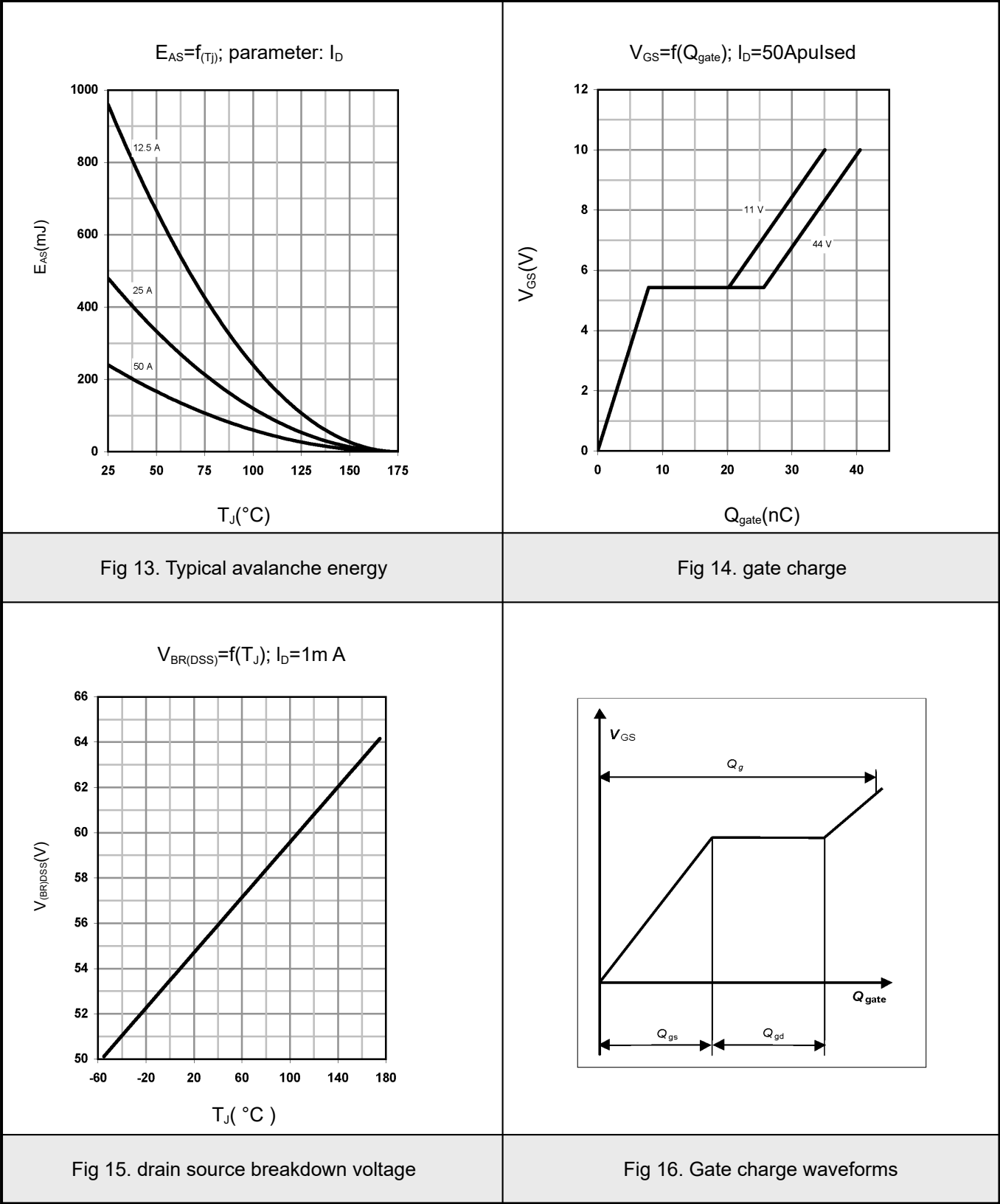


6.3Typical characteristic



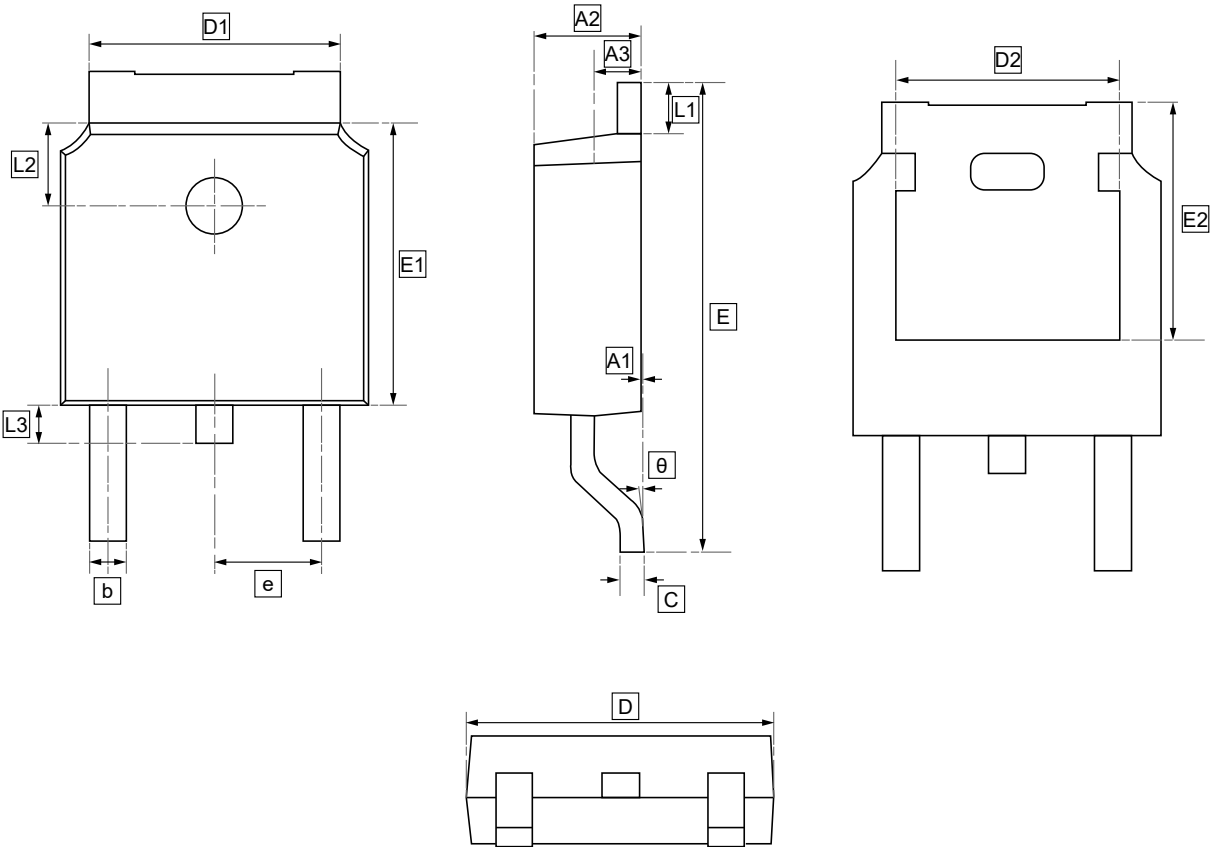


6.4Typical characteristic





7.TO-252 Package Outline Dimensions

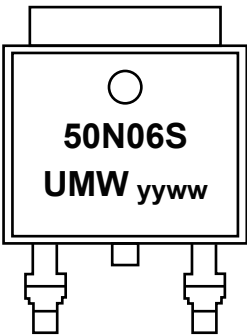


DIMENSIONS (mm are the original dimensions)

Symbol	A1	A2	A3	b	c	D	D1	D2	E	E1	E2	e	L1	L2	L3	θ
Min	0.00	2.18	0.90	0.65	0.46	6.35	4.95	4.32	9.40	5.97	5.21	2.286 BSC	0.89	1.70	0.60	0.00
Max	0.13	2.39	1.10	0.85	0.61	6.73	5.46	4.90	10.41	6.22	5.38		1.27	1.90	1.00	8.00



8.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW IPD50N06S2-14	TO-252	2500	Tape and reel



9.Disclaimer

UMW reserves the right to make changes to all products, specifications. Customers should obtain the latest version of product documentation and verify the completeness and currency of the information before placing an order.

When applying our products, please do not exceed the maximum rated values, as this may affect the reliability of the entire system. Under certain conditions, any semiconductor product may experience faults or failures. Buyers are responsible for adhering to safety standards and implementing safety measures during system design, prototyping, and manufacturing when using our products to prevent potential failure risks that could lead to personal injury or property damage.

Unless explicitly stated in writing, UMW products are not intended for use in medical, life-saving, or life-sustaining applications, nor for any other applications where product failure could result in personal injury or death. If customers use or sell the product for such applications without explicit authorization, they assume all associated risks.

When reselling, applying, or exporting, please comply with export control laws and regulations of China, the United States, the United Kingdom, the European Union, and other relevant countries, regions, and international organizations.

This document and any actions by UMW do not grant any intellectual property rights, whether express or implied, by estoppel or otherwise. The product names and marks mentioned herein may be trademarks of their respective owners.