

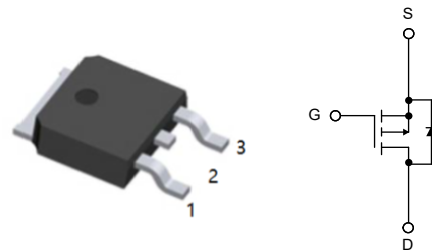
1.Features

- $V_{DS(V)}=-40V$
- $I_D=-50A$
- $R_{DS(ON)}<10.6m\Omega(V_{GS}=-10V)$
- $R_{DS(ON)}<17.2m\Omega(V_{GS}=-4.5V)$
- AEC qualified
- 175°C operating temperature
- Intended for reverse battery protection

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	$T_C=25^{\circ}C, V_{GS}=-10V^{(1)}$	-50	A
		$T_C=100^{\circ}C, V_{GS}=-10V^{(2)}$	-40	A
Pulsed drain current ⁽²⁾	$I_{D,pulse}$	$T_C=25^{\circ}C$	-200	A
Avalanche energy, single pulse	E_{AS}	$I_D=-25A$	18	mJ
Avalanche current, single pulse	I_{AS}		-50	A
Gate source voltage	V_{GS}		$\pm 16^{(3)}$	V
Power dissipation	P_{tot}	$T_C=25^{\circ}C$	58	W
Storage temperature	T_J, T_{STG}		-55 to 175	°C
IEC cimatic category; DIN IEC 68-1			55/175/56	



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

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Thermal resistance, junction -case	R_{thJC}				2.6	K/W
SMD version, device on PCB	R_{thJA}	minimal footprint			62	K/W
		6 cm ² cooling area ⁴⁾			40	K/W
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-1mA$	-40			V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-85\mu A$	-1.2	-1.7	-2.2	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=-32V, V_{GS}=0V, T_J=25^{\circ}\text{C}$		-0.03	-1	μA
		$V_{DS}=-32V, V_{GS}=0V, T_J=125^{\circ}\text{C}^{2)}$		-7	-70	μA
Gate-source leakage current	I_{GSS}	$V_{GS}=-16V, V_{DS}=0V$			-100	nA
Drain-source on-state resistance	$R_{DS(ON)}$	$V_{GS}=-4.5V, I_D=-30A$		12.3	17.2	m Ω
		$V_{GS}=-10V, I_D=-50A$		8.2	10.6	m Ω
Input capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=-25V, f=1MHz$		3000	3900	pF
Output capacitance	C_{oss}			1100	1400	pF
Reverse transfer capacitance	C_{rss}			37	74	pF
Turn-on delay time	$t_{D(on)}$	$V_{DD}=-20V, V_{GS}=-10V$ $I_D=-50A, R_G=3.5\Omega$		12		ns
Rise time	t_r			9		ns
Turn-off delay time	$t_{D(off)}$			46		ns
Fall time	t_f			39		ns
Gate to source charge	Q_{gs}	$V_{DD}=-32V, I_D=-50A$ $V_{GS}=0 \text{ to } -10V$		11	14	nC
Gate to drain charge	Q_{gd}			8	16	nC
Gate charge total	Q_g			45	59	nC
Gate plateau voltage	$V_{plateau}$			-3.6		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}	$V_{GS}=0V, I_F=-50A, T_J=25^{\circ}C$		-1	-1.3	V
Reverse recovery time ²⁾	t_{rr}	$V_R=-20V, I_F=50A, di_F/dt=-100A/\mu s$		40		ns
Reverse recovery charge ²⁾	Q_{rr}			32		nC

Notes:

¹⁾ Current is limited by bondwire; with an $R_{thJC} = 2.6K/W$ the chip is able to carry 60A at 25°C.

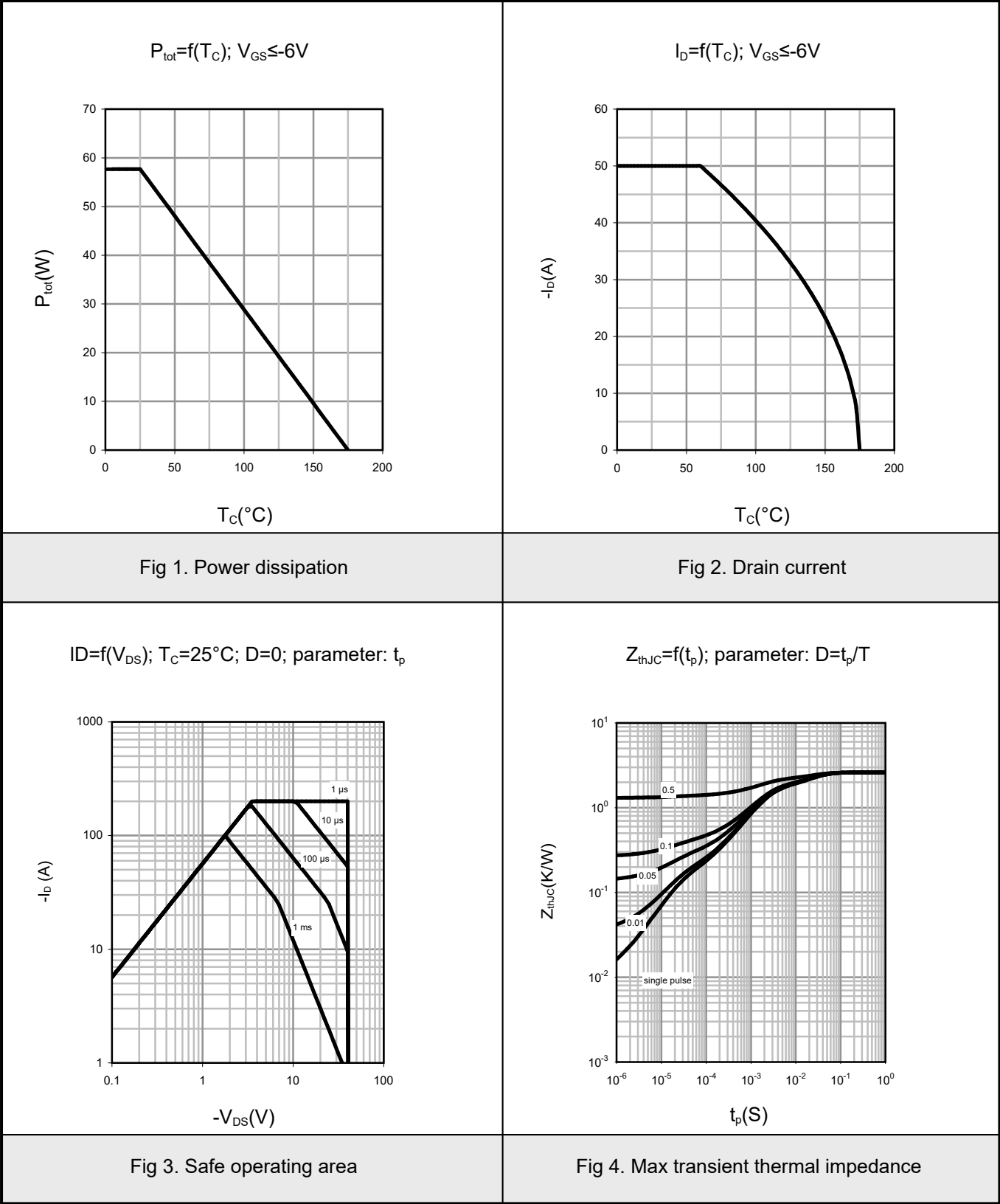
²⁾ Specified by design. Not subject to production test.

⁴⁾ $V_{GS}=+5V/-16V$ according AEC; $V_{GS}=+16V$ for max 168h at $T_J=175^{\circ}C$

⁵⁾ 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.

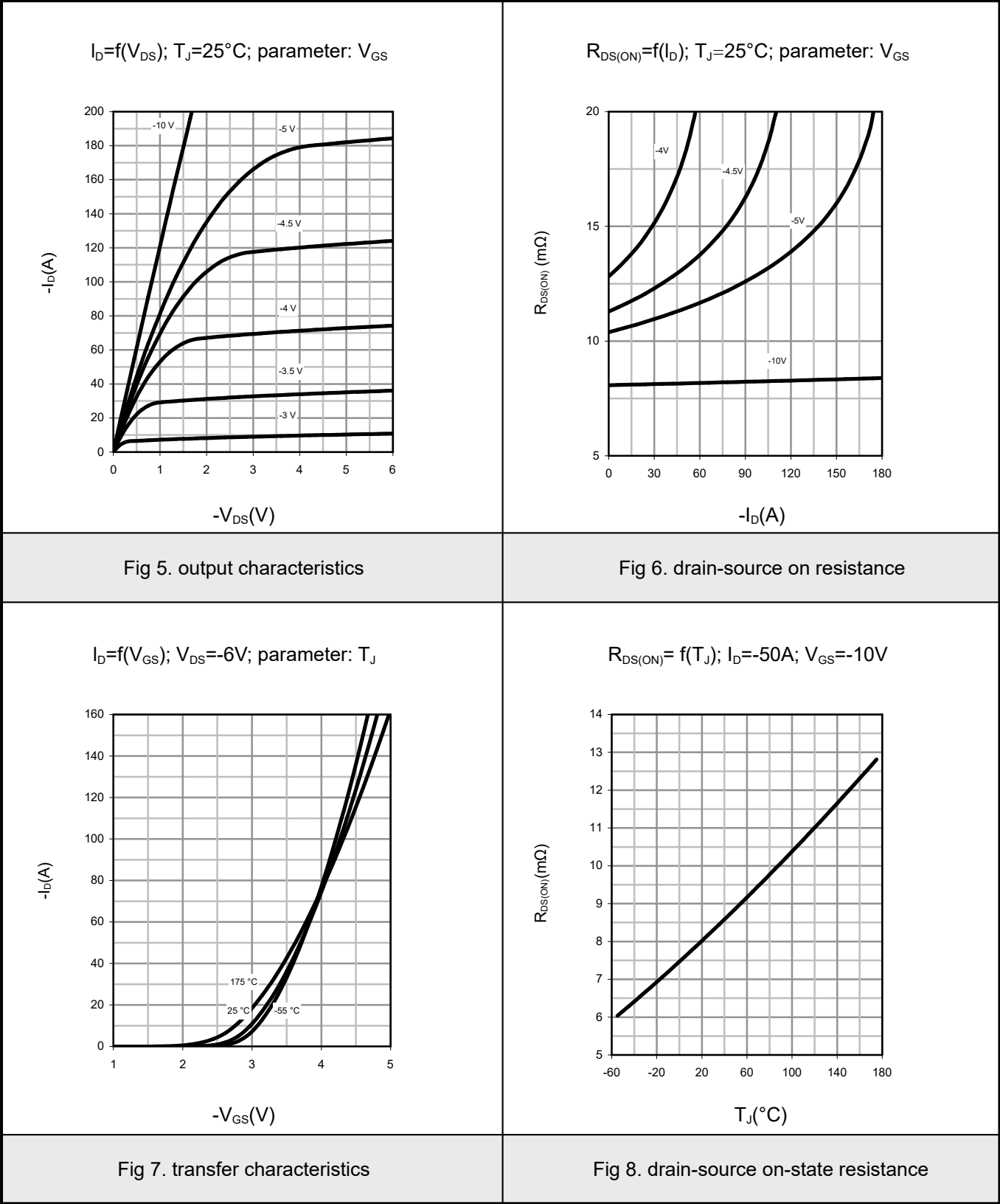


5.1 Typical characteristic



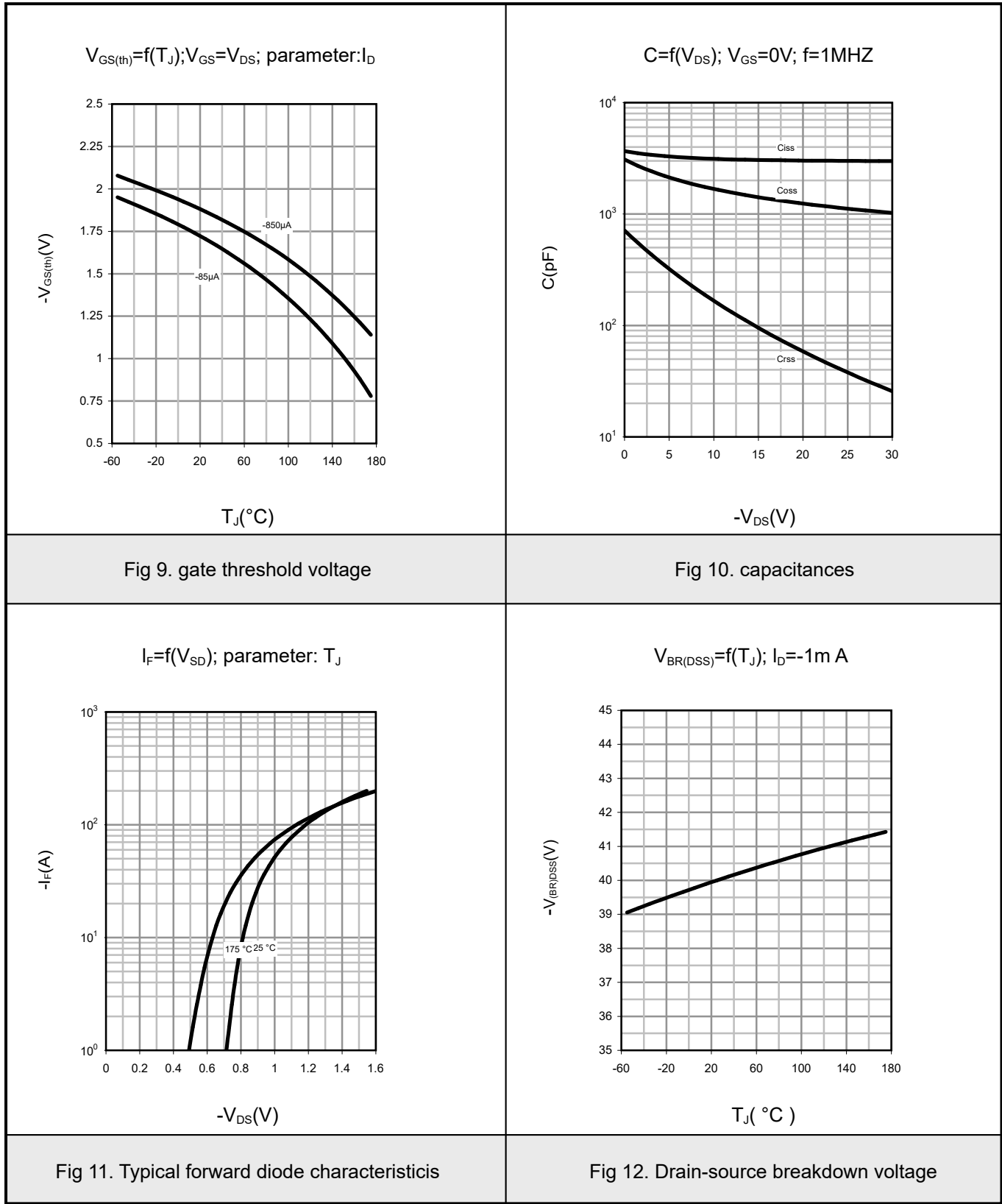


5.2Typical characteristic



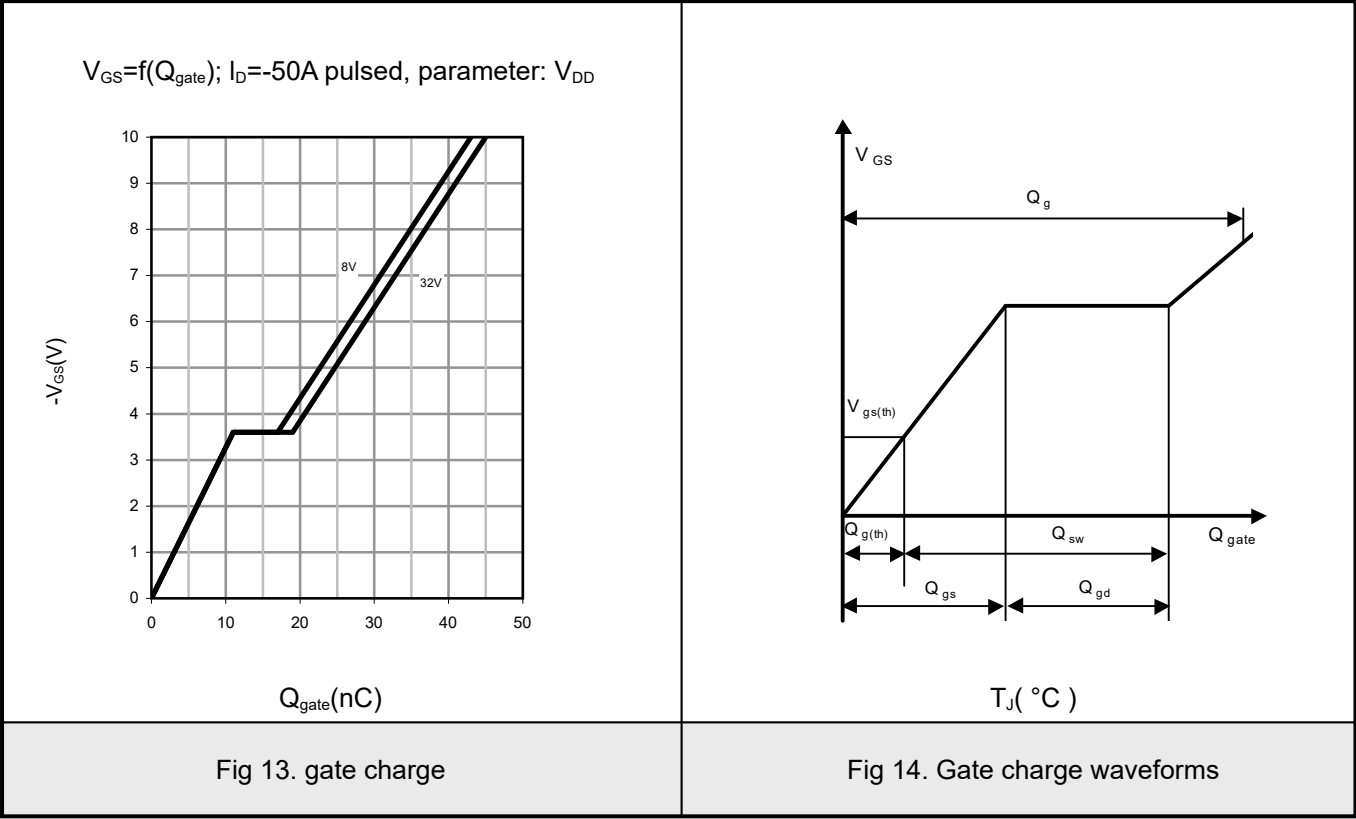


5.3Typical characteristic



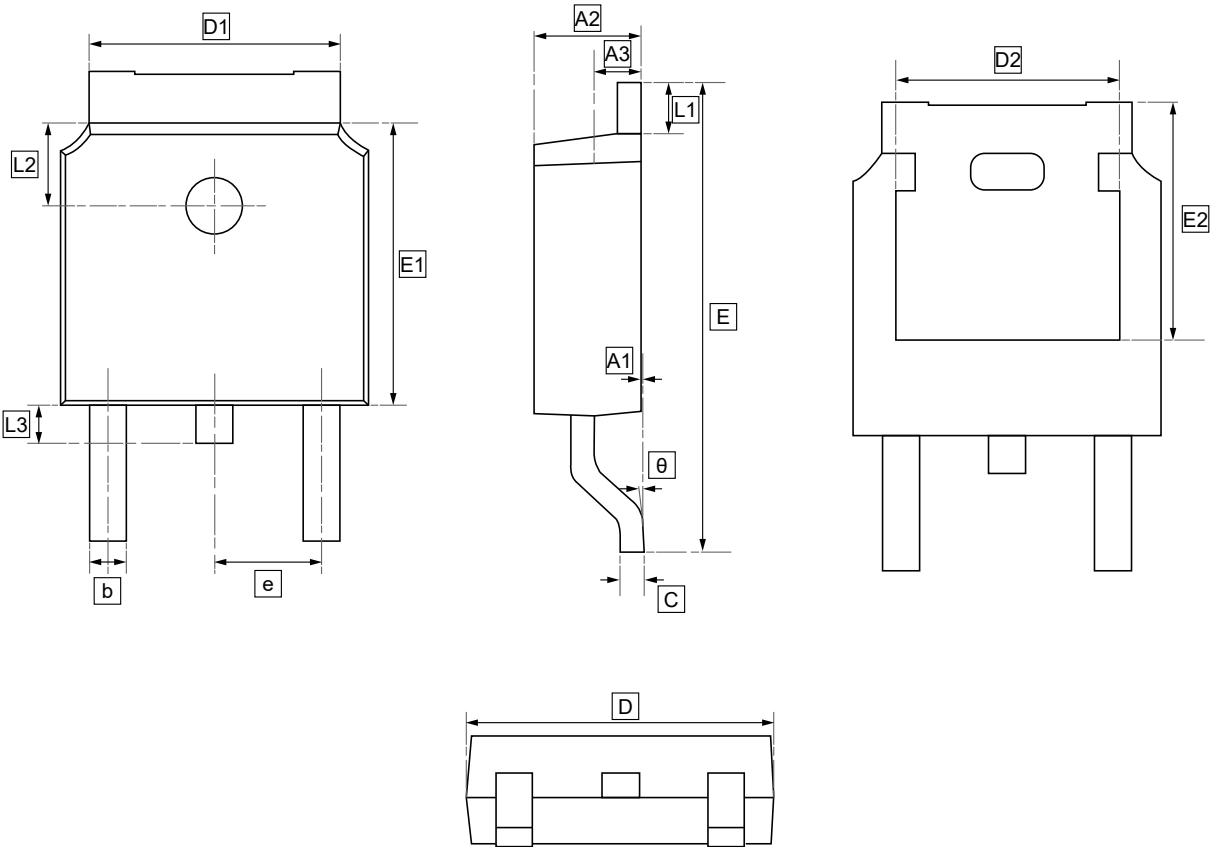


5.4Typical characteristic





6.TO-252 Package Outline Dimensions

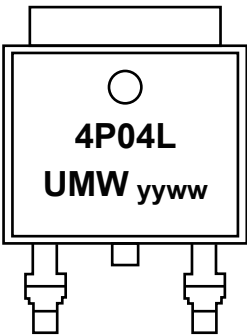


DIMENSIONS (mm are the original dimensions)

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



7.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW IPD50P04P4L11	TO-252	2500	Tape and reel



8.Disclaimer

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