

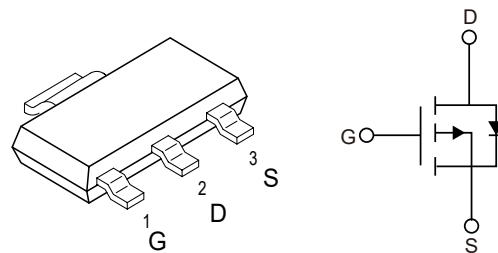
1.Features

- $V_{DS(V)} = -60V$
- $I_D = -1.9A (V_{GS} = -10V)$
- $R_{DS(ON)} < 300m\Omega (V_{GS} = -10V)$
- Enhancement mode
- Avalanche rated
- dv/dt rated
- Pb-free lead plating; RoHS compliant

2.Pinning information

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

SOT-223



3.Absolute Maximum Ratings $T_J = 25^\circ C$ unless otherwise noted

Parameter	Symbol	Conditions	Value	Units
Continuous drain current	I_D	$T_A = 25^\circ C$	-1.9	A
		$T_A = 70^\circ C$	-1.5	A
Pulsed drain current	$I_{D,pulse}$	$T_A = 25^\circ C$	-7.6	A
Avalanche energy, single pulse	E_{AS}	$I_D = 1.9A, R_{GS} = 25\Omega$	70	mJ
Avalanche energy, periodic limited by $T_{j,max}$	E_{AR}		0.18	
Reverse diode dv/dt	dv/dt	$I_D = 1.9A, V_{DS} = 48V,$ $di/dt = -200A/\mu s, T_{j,max} = 150^\circ C$	-6	kV/ μs
Gate source voltage	V_{GS}		± 20	V
Power dissipation	P_{tot}	$T_A = 25^\circ C$	1.8	W
Operating and storage temperature	T_J, T_{STG}		-55 to 150	
$^\circ C$			1A (250V to 500V)	
ESD class		JESD22-C101 (HBM)	260 $^\circ C$	
Soldering temperature			55/150/56	



4.Thermal resistance rating

Parameter	Symbol	Conditions	min.	typ.	max.	Units
Thermal resistance, junction -soldering point	R_{thJS}				20	K/W
SMD version, device on PCB:	R_{thJA}	minimal footprint			110	K/W
		6 cm ² cooling area ¹⁾			70	K/W



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

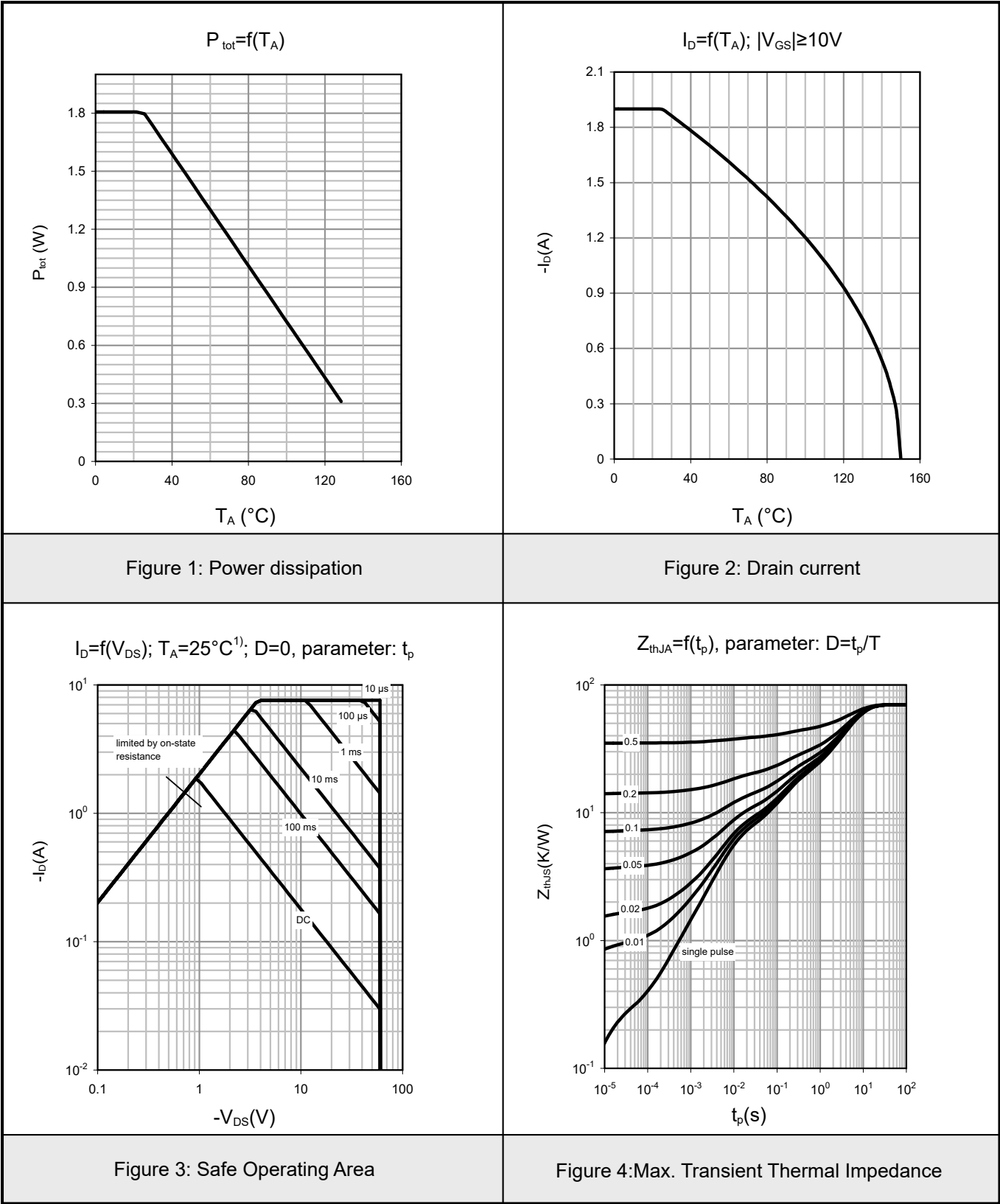
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =-250μA	-60			V
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-2.1	-3	-4	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =-60V, V _{GS} =0V, T _J =25°C		-0.1	-1	μA
		V _{DS} =-60V, V _{GS} =0V, T _J =125°C		-10	-100	μA
Gate-source leakage current	I _{GSS}	V _{GS} =-20V, V _{DS} =0V		-10	-100	nA
Drain-source on-state resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-1.9A		239	300	mΩ
Transconductance	g _{FS}	V _{DS} >2 I _D R _{DS(ON)} max, I _D =-1.9A	1.3	2.6		S
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =-25V, f =1MHz		328	410	pF
Output Capacitanc	C _{oss}			105	135	pF
Reverse Transfer Capacitance	C _{rss}			38	48	pF
Turn-On DelayTime	t _{D(on)}	V _{DD} =-30V, V _{GS} =-10V I _D =-1.9A, R _G =6Ω		14	21	ns
Rise Time	t _r			28	42	ns
Turn-Off DelayTime	t _{D(off)}			92	138	ns
Fall Time	t _f			60	90	ns
Gate Charge Characteristics						
Gate to source charge	Q _{gs}	V _{DD} =-48V, I _D =-1.9A V _{GS} =0 to -10V		-1.4	-1.9	nC
Gate to drain charge	Q _{gd}			-4.9	-7.4	nC
Gate charge total	Q _g			-10	-14	nC
Gate plateau voltage	V _{plateau}			-4.34		V



Reverse Diode						
Diode continuous forward current	I_S	$T_A=25^{\circ}\text{C}$			-1.98	A
Diode pulse current	$I_{S,pulse}$				-7.6	A
Diode forward voltage	V_{SD}	$V_{GS}=0\text{ V}, I_F=-1.9\text{ A}, T_J=25^{\circ}\text{C}$		-0.83	-1.1	V
Reverse recovery time	t_{rr}	$V_R=30\text{ V}, I_F= I_S ,$ $di_F/dt = 100\text{ A}/\mu\text{s}$		36	54	ns
Reverse recovery charge	Q_{rr}			41	62	nC

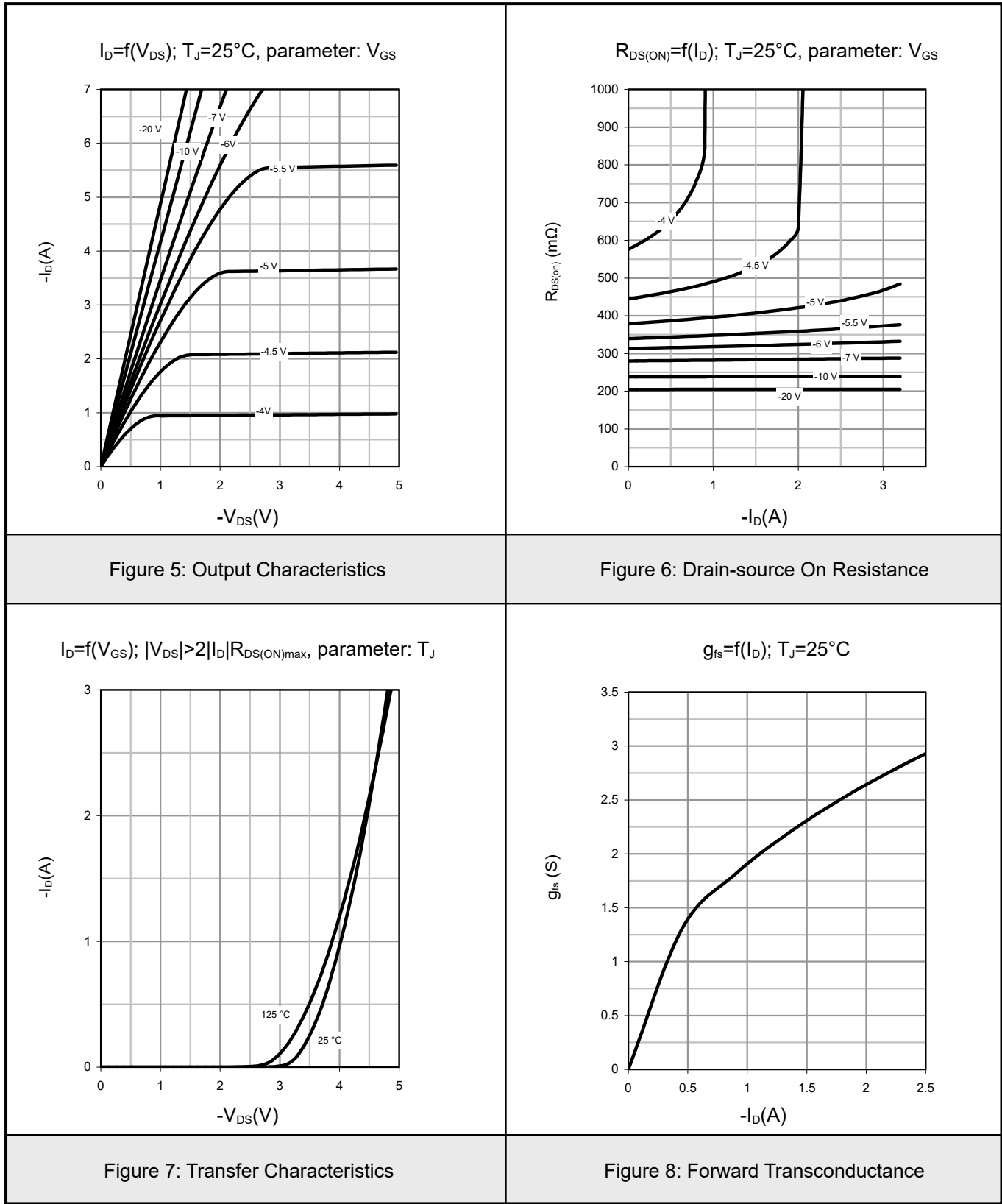


6.1Typical characteristic



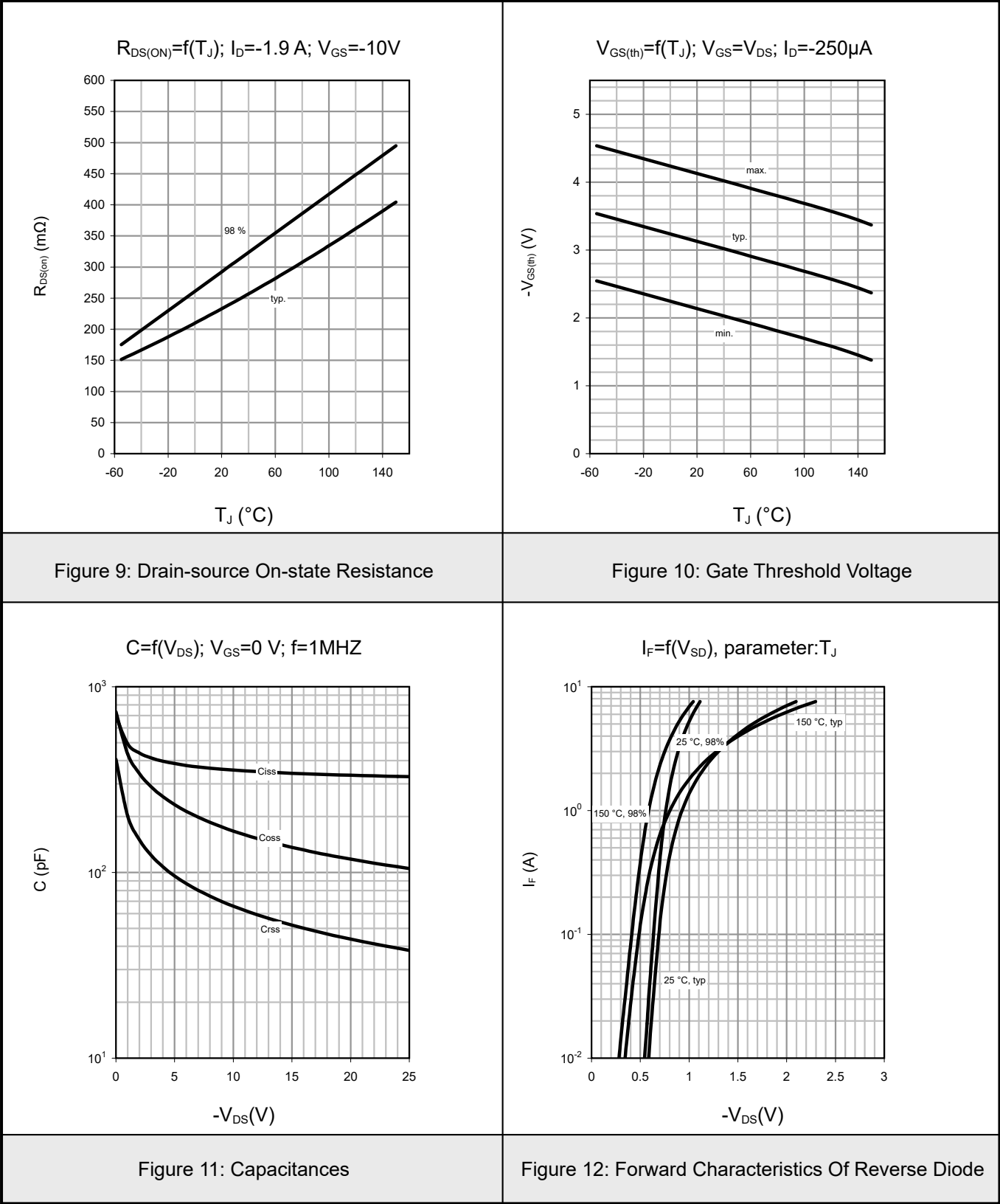


6.2Typical characteristic



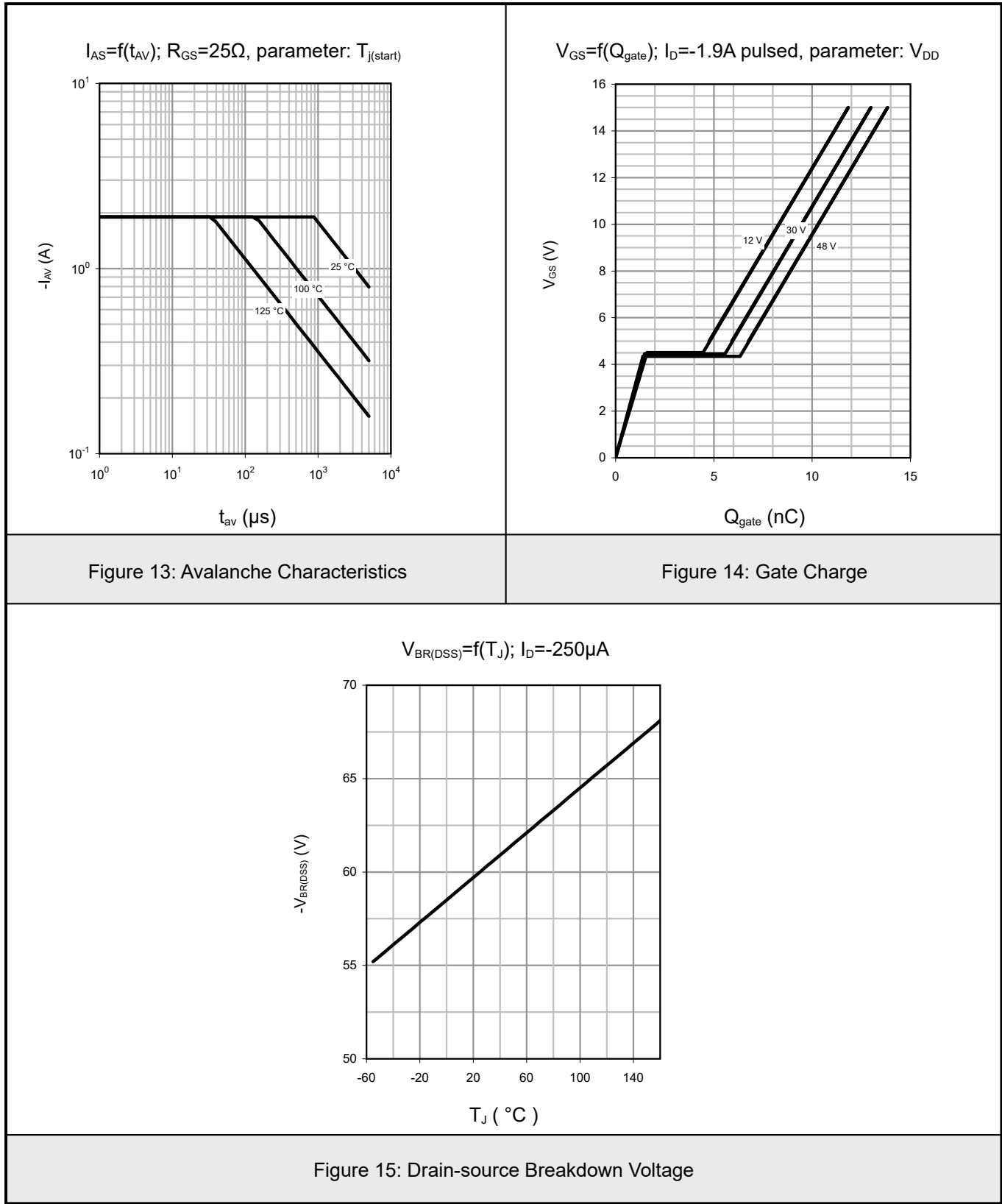


6.3Typical characteristic



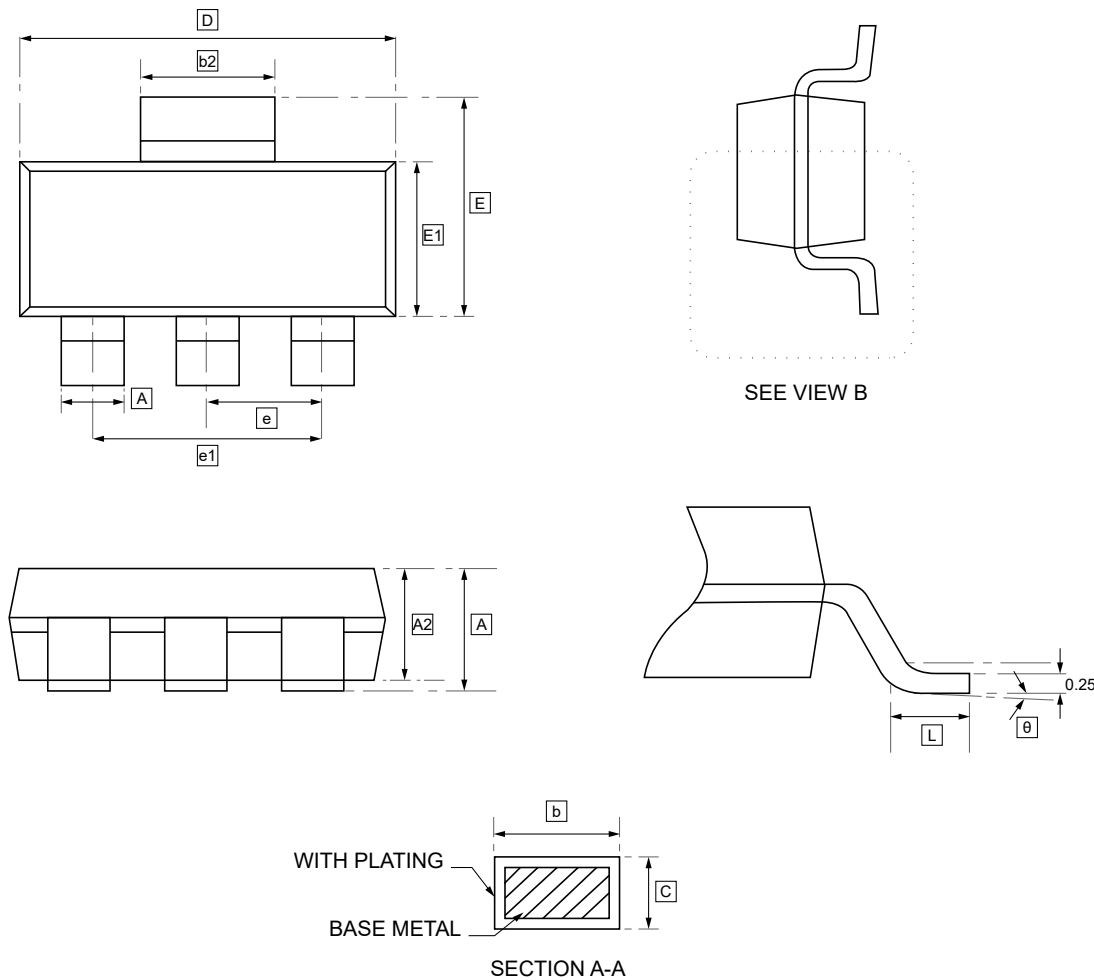


6.4Typical characteristic





7.SOT-223 Package Outlie Dimensions

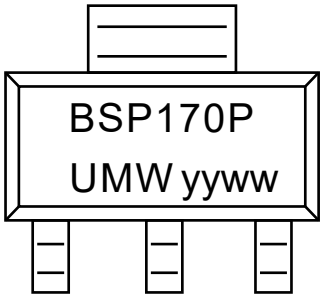


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	b	b2	c	D	E	E1	e	e1	L	θ
Min		0.02	1.55	0.66	2.90	0.23	6.30	6.70	3.30	2.30	4.60	0.90	0°
Max	1.80	0.10	1.65	0.84	3.10	0.33	6.70	7.30	3.70	BSC	BSC		8°



8.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW BSP170P	SOT-223	2500	Tape and reel



9.Disclaimer

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