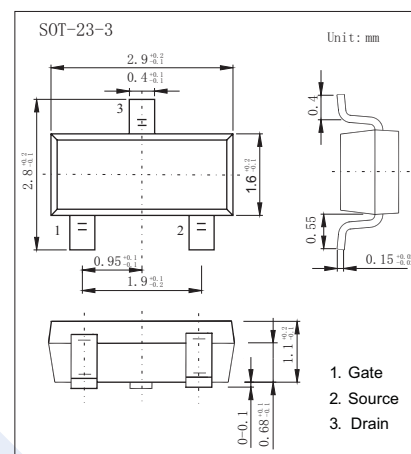
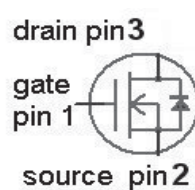


N-Channel Enhancement MOSFET

BSS127

■ Features

- N-Channel
- Enhancement mode
- Logic level
- dv/dt rated
- $V_{DS} (V) = 600V$
- $I_D = 0.021 A$
- $R_{DS(ON)} < 500\Omega$

■ Absolute Maximum Ratings $T_a = 25^\circ C$, unless otherwise specified

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	600	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current	$T_A = 25^\circ C$	I_D	0.021	A
	$T_A = 70^\circ C$		0.017	
Pulsed Drain Current		I_{DM}	0.09	
Reverse diode dv/dt	$I_D = 0.09A$, $V_{DS} = 480V$, $di/dt = 200A/\mu s$, $T_{J,max} = 150^\circ C$	dv/dt	6	kV/ μs
Power Dissipation		P_{tot}	0.5	W
Thermal Resistance.Junction- to-minimal footprint		R_{thJA}	250	$^\circ C/W$
Junction Temperature		T_J	150	$^\circ C$
Storage Temperature Range		T_{stg}	-55 to 150	

N-Channel Enhancement MOSFET

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■ Electrical Characteristics Ta = 25°C, unless otherwise specified

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	I _D =250μA, V _{GS} =0V	600			V
Drain-source leakage Current	I _{D(off)}	V _{DS} =600V, V _{GS} =0V			0.1	μA
		V _{DS} =600V, V _{GS} =0V, T _J =150°C			10	
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =0V, I _D =8μA	1.4		2.6	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =0.016A			500	Ω
		V _{GS} =4.5V, I _D =0.016A			600	
Forward Transconductance	g _{FS}	V _{DS} >2 I _D R _{DS(on)max} , I _D =0.01A	0.007			S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =25V, f=1MHz		21	28	pF
Output Capacitance	C _{oss}			2.4	3	
Reverse Transfer Capacitance	C _{rss}			1.0	1.5	
Gate Source Charge	Q _{gs}	V _{DS} =400V, I _D =0.01A, V _{GS} =0 to 10V		0.05	0.08	nC
Gate Drain Charge	Q _{gd}			1.2	1.8	
Gate charge total	Q _g			1.4	2.1	
Gate plateau voltage	V _{plateau}			3.5		
Turn-On DelayTime	t _{d(on)}	V _{GS} =10V, V _{DS} =300V, I _D =0.01A, R _{GEN} =6Ω		6.1	19.0	ns
Turn-On Rise Time	t _r			9.7	14.5	
Turn-Off DelayTime	t _{d(off)}			14	21	
Turn-Off Fall Time	t _f			115	170	
Body Diode Reverse Recovery Time	t _{rr}	V _R =300V, I _F = 0.016A, di _F /dt= 100A/μs		160	240	nA
Body Diode Reverse Recovery Charge	Q _{rr}			13.2	19.8	
Maximum Body-Diode Continuous Current	I _S				0.016	A
Diode Pulse Current	I _{S,pulse}				0.09	
Diode Forward Voltage	V _{SD}	I _S =0.016A, V _{GS} =0V			1.2	V

■ Marking

Marking	SI
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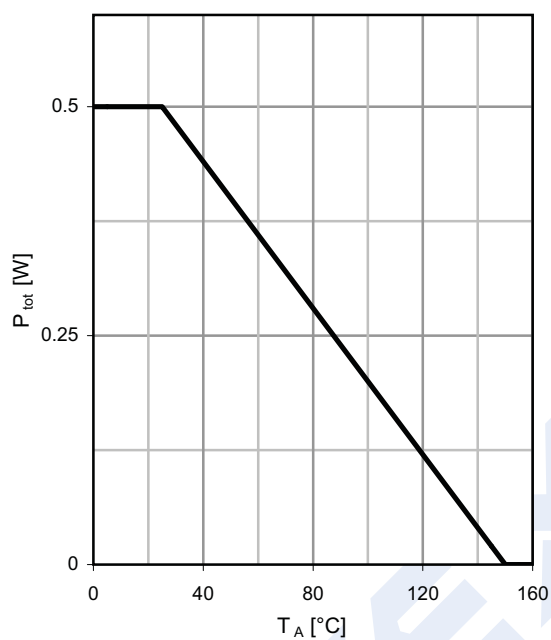
N-Channel Enhancement MOSFET

BSS127

■ Typical Characteristics

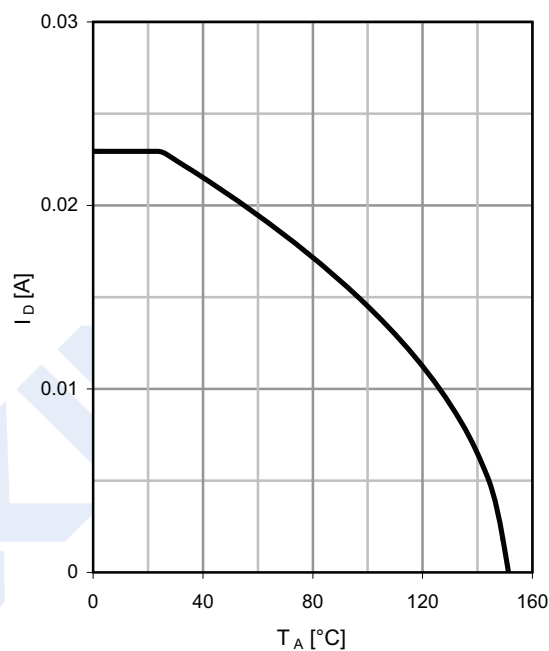
1 Power dissipation

$$P_{\text{tot}} = f(T_A)$$



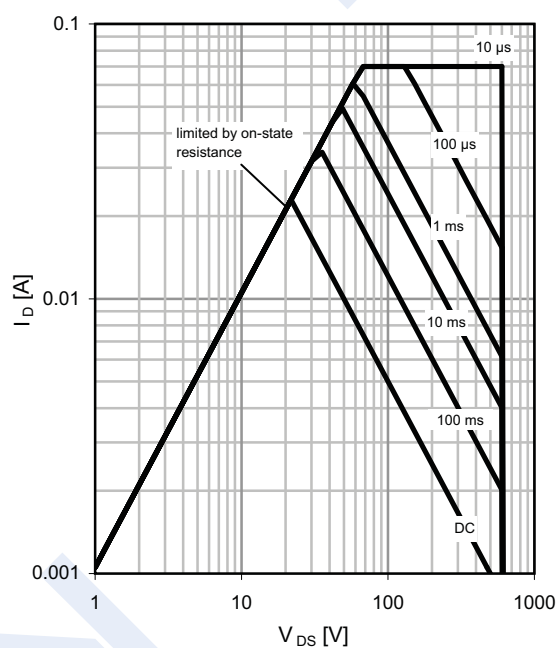
2 Drain current

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



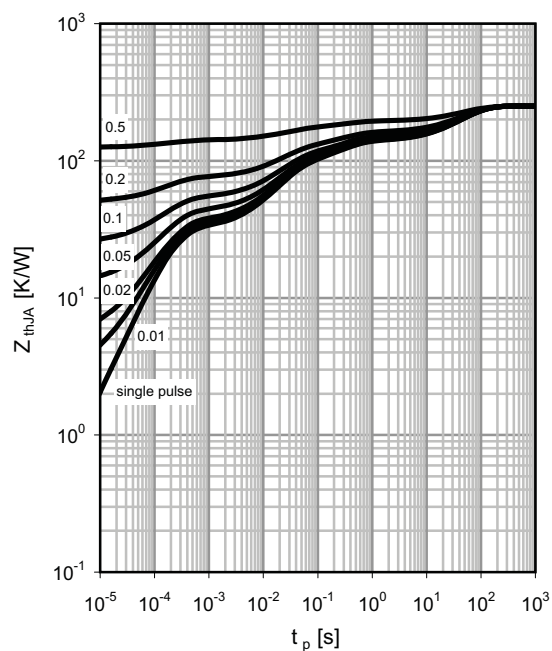
3 Safe operating area

$$I_D = f(V_{DS}); T_A = 25^\circ\text{C}; D = 0$$

parameter: t_p 

4 Max. transient thermal impedance

$$Z_{\text{thJA}} = f(t_p)$$

parameter: $D = t_p/T$ 

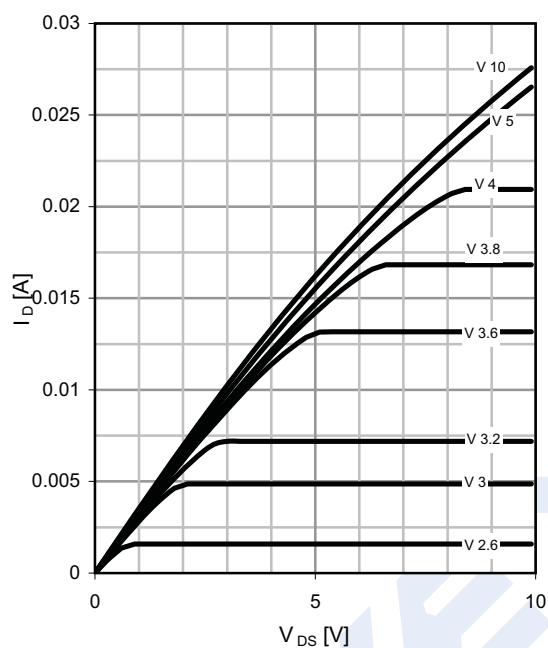
N-Channel Enhancement MOSFET

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■ Typical Characteristics

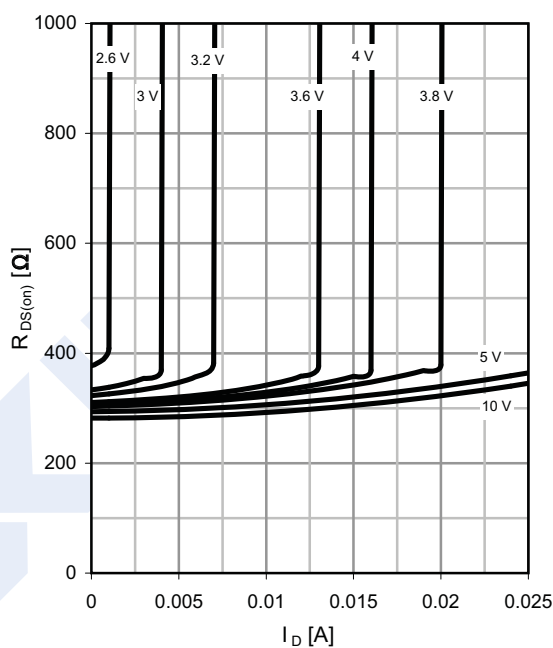
5 Typ. output characteristics

$$I_D = f(V_{DS}); T_j = 25^\circ\text{C}$$

parameter: V_{GS} 

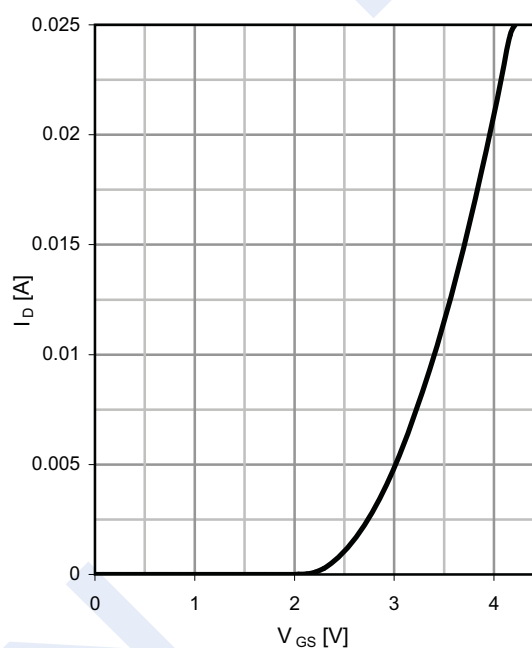
6 Typ. drain-source on resistance

$$R_{DS(on)} = f(I_D); T_j = 25^\circ\text{C}$$

parameter: V_{GS} 

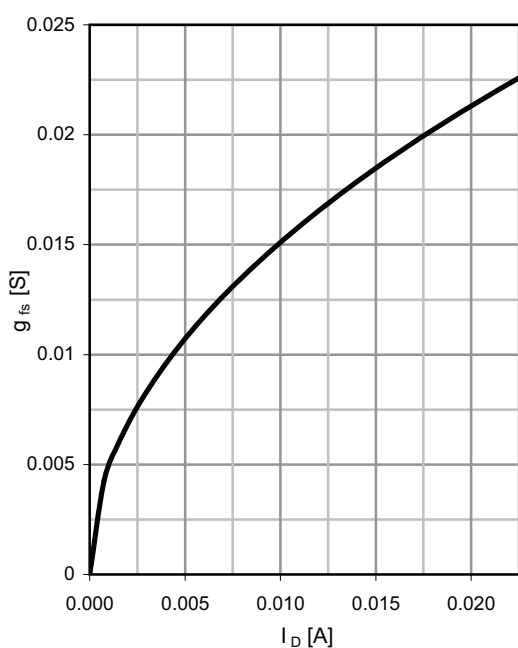
7 Typ. transfer characteristics

$$I_D = f(V_{GS}); |V_{DS}| > 2|I_D|R_{DS(on)max}$$



8 Typ. forward transconductance

$$g_{fs} = f(I_D); T_j = 25^\circ\text{C}$$



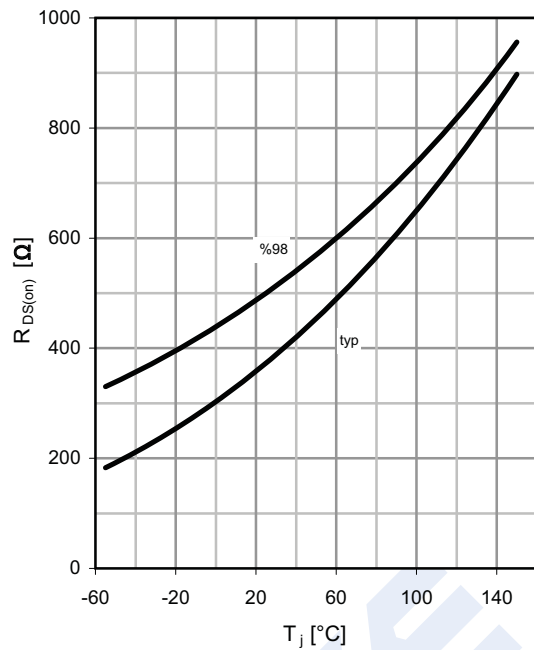
N-Channel Enhancement MOSFET

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■ Typical Characteristics

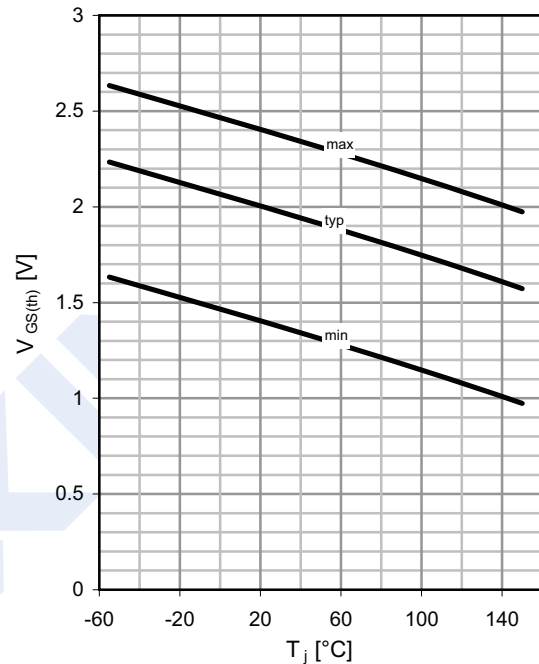
9 Drain-source on-state resistance

$$R_{DS(on)} = f(T_j); I_D = 0.1 \text{ A}; V_{GS} = 10 \text{ V}$$



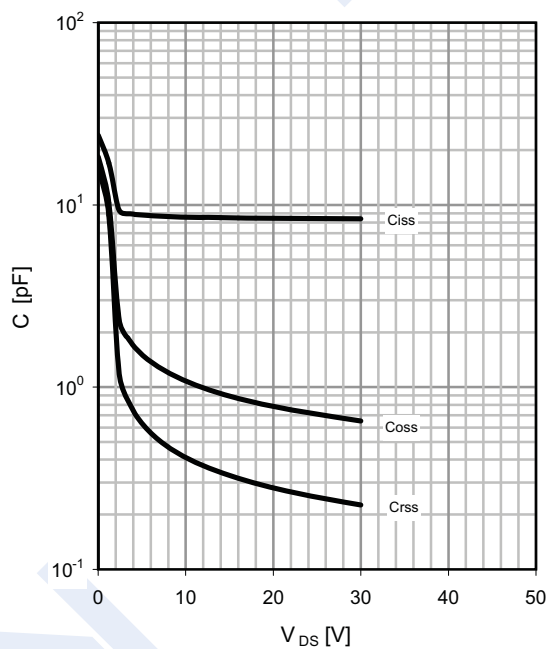
10 Typ. gate threshold voltage

$$V_{GS(th)} = f(T_j); V_{DS} = V_{GS}; I_D = 8 \mu\text{A}$$

parameter: I_D 

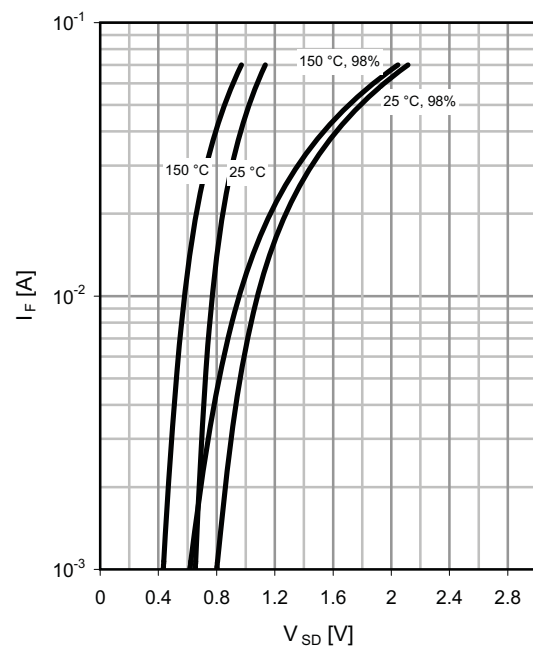
11 Typ. capacitances

$$C = f(V_{DS}); V_{GS} = 0 \text{ V}; f = 1 \text{ MHz}; T_j = 25^\circ\text{C}$$



12 Forward characteristics of reverse diode

$$I_F = f(V_{SD})$$

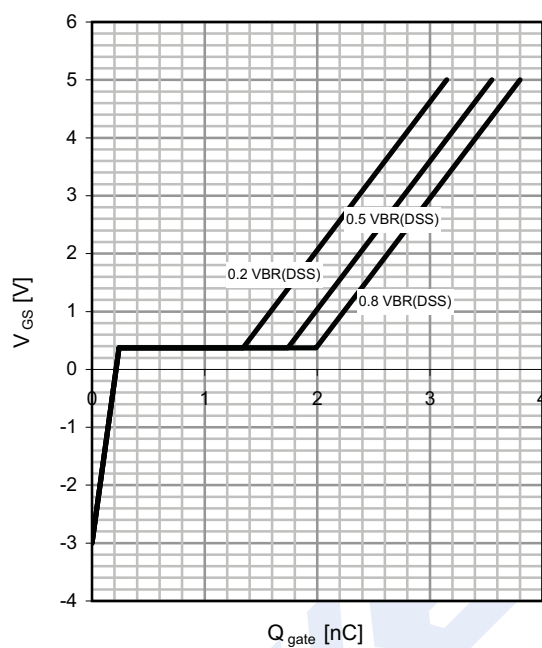
parameter: T_j 

N-Channel Enhancement MOSFET

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■ Typical Characteristics

13 Typ. gate charge

 $V_{GS}=f(Q_{gate}); I_D=0.01\text{ A pulsed}$ parameter: V_{DD} 

14 Drain-source breakdown voltage

 $V_{BR(DSS)}=f(T_j); I_D=250\text{ }\mu\text{A}$ 