BSS127E

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
600V	500Ω@10V	21mA
	600Ω@4.5V	

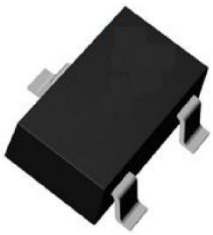
Feature

- Ultra low gate charge
- Ultra high switching speed
- ESD Protection

Application

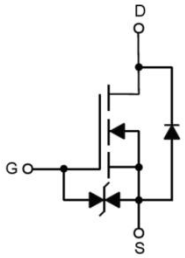
- Motor control
- DC-DC converters

Package

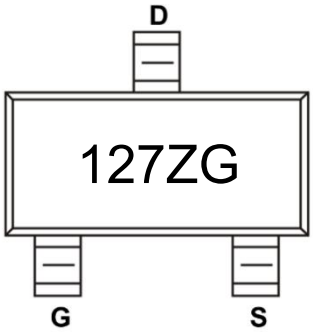


SOT-23

Circuit diagram



Marking



Absolute maximum ratings (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	600	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	21	mA
Pulsed Drain Current	I_{DM}	90	mA
Power Dissipation	P_D	0.3	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	325	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	600			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =600V,V_{GS} = 0V			100	nA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±10	μA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =8μA	1.4		2.6	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =16mA		300	500	Ω
		V_{GS} =4.5V, I_D =16mA		350	600	
Dynamic characteristics[1)]						
Input Capacitance	C_{iss}	V_{DS} =25V,V_{GS} =0V,f =1MHz		7		pF
Output Capacitance	C_{oss}			6.2		
Reverse Transfer Capacitance	C_{rss}			2.5		
Total Gate Charge	Q_g	V_{DS} =480V,V_{GS} =10V, I_D =20mA		7		nC
Gate-Source Charge	Q_{gs}			18		
Gate-Drain Charge	Q_{gd}			0.5		
Turn-on delay time	$t_{d(on)}$	V_{DS} =300V, V_{GS} =10V, I_D =20mA, R_G=6Ω,		9		nS
Turn-on rise time	t_r			45		
Turn-off delay time	$t_{d(off)}$			10		
Turn-off fall time	t_f			180		
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_F=16mA			1.2	V
Diode Forward Current	I_S	V_{DS} =V_{GS} =0V,T_A = 25°C			16	mA
Maximum Diode Forward Current	I_{SM}				90	
Reverse Recovery Time	t_{rr}	V_R =300V, I_F =16mA dI$_F$/dt = 100A/μs		150		nS
Reverse Recovery Charge	Q_{rr}			240		μC

Notes:

1) Guaranteed by design, not subject to production testing.

Typical Characteristics

Fig.1 Drain Current vs. Drain-Source Voltage

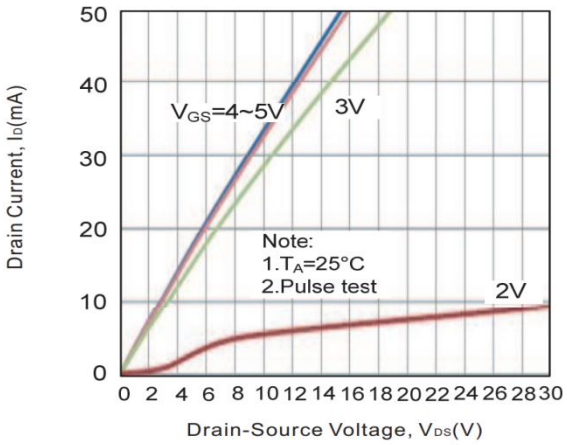


Fig.2 Drain-Source On-Resistance vs. Gate-Sourec Voltage

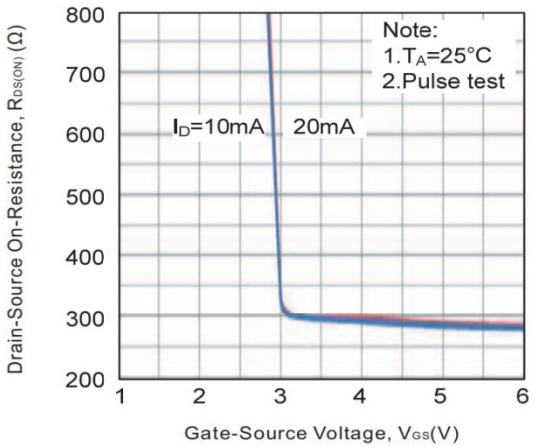


Fig.3 Gate Charge Characteristics

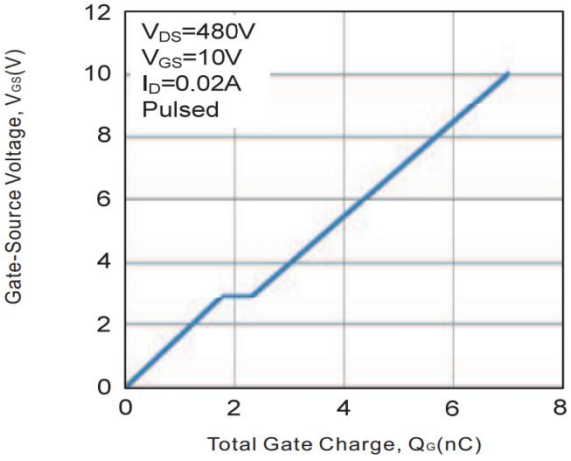


Fig.4 Capacitance Characteristics

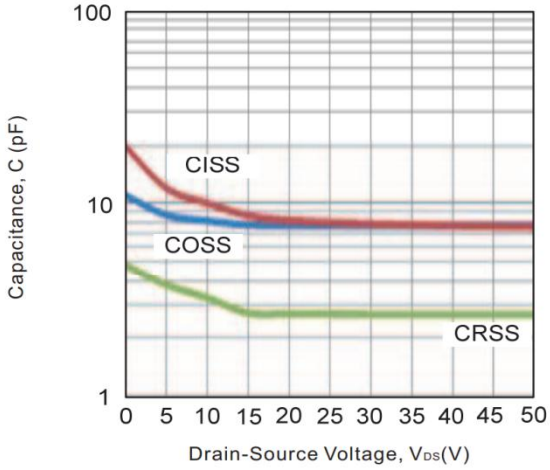


Fig.5 Drain-Source On-Resistance vs. Junction Temperature

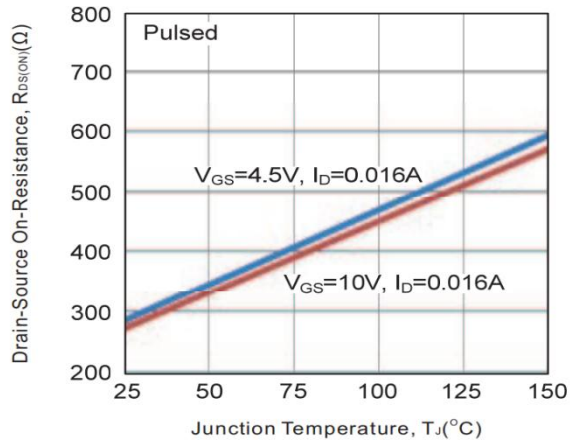
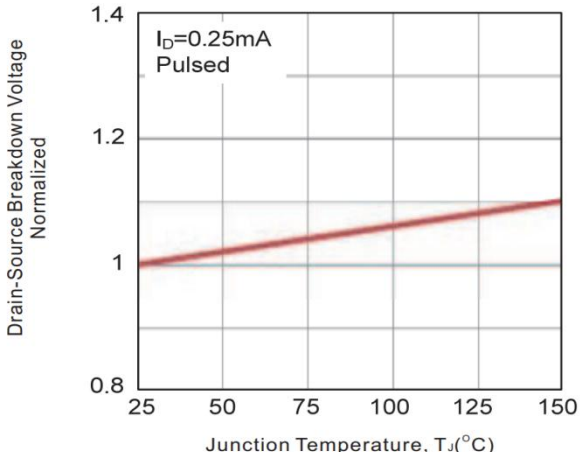


Fig.6 Breakdown Voltage vs. Junction Temperature



Typical Characteristics

Fig.7 Gate Threshold Voltage vs. Junction Temperature

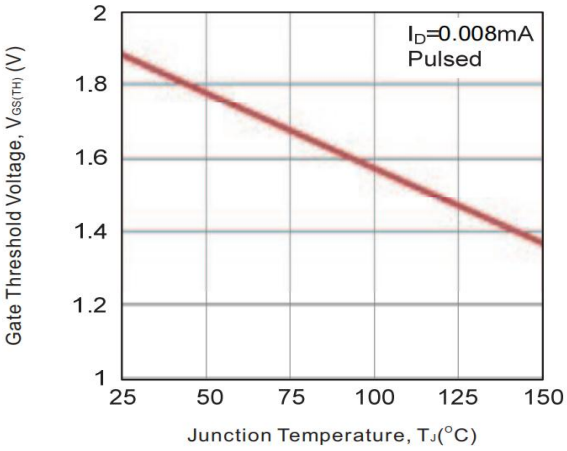


Fig.8 Source Current vs. Source-Drain Voltage

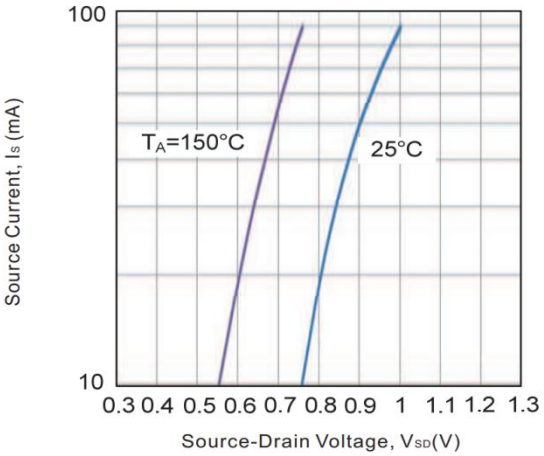


Fig.9 Drain Current vs. Gate-Source Voltage

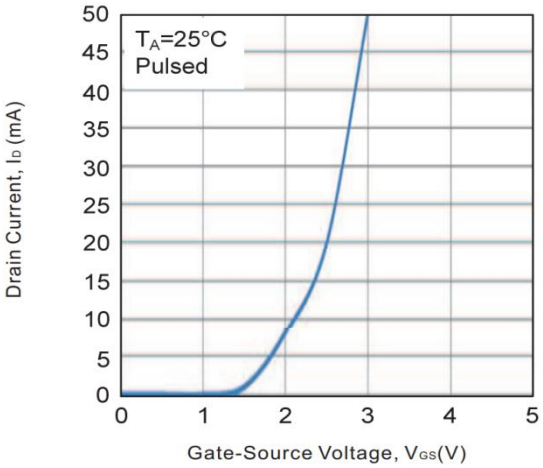


Fig.10 Drain-Source On-Resistance vs. Drain Current

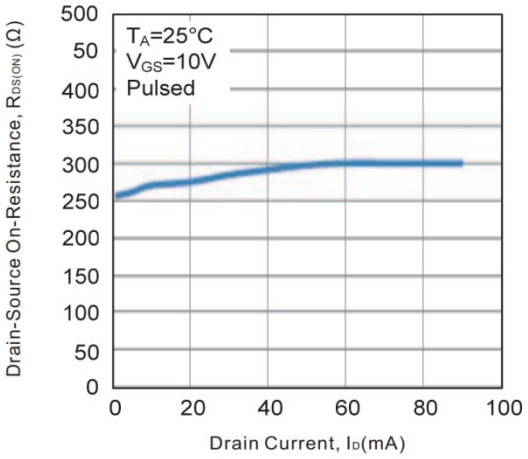
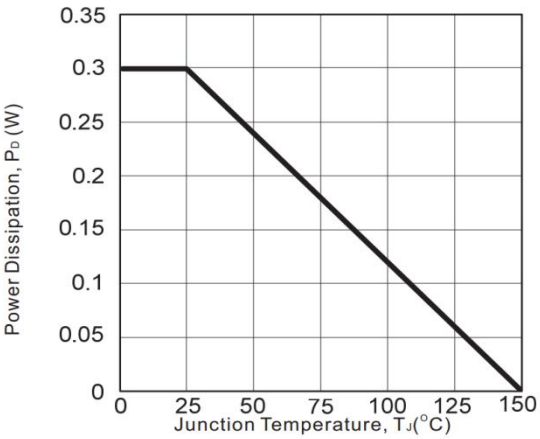
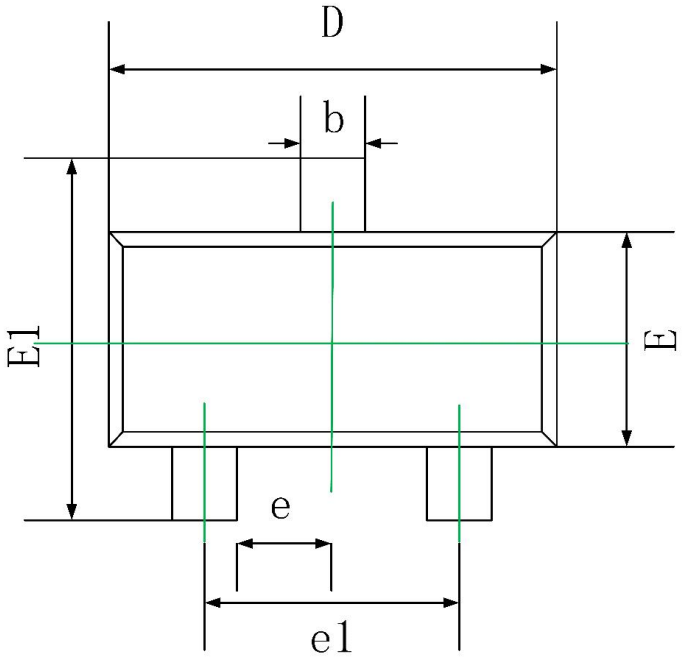
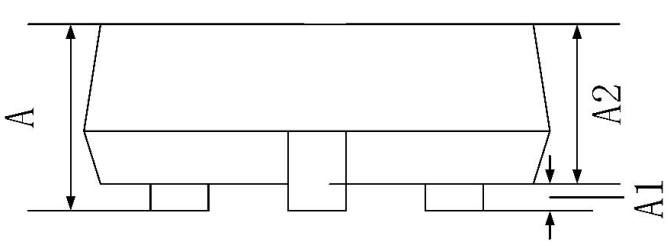


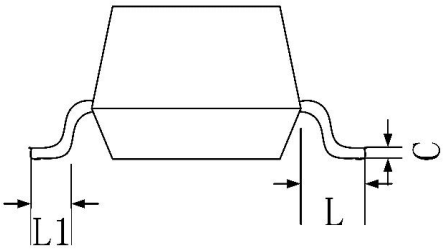
Fig.11 Power Dissipation vs. Junction Temperature



SOT-23 Package Information







Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.550	0.012	0.022
C	0.080	0.200	0.003	0.008
D	2.700	3.100	0.106	0.122
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020