

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	110mΩ@10V	8A
	140mΩ@4.5V	

Feature

- Advanced trench technology
- Excellent $R_{DS(ON)}$
- Low gate charge

Application

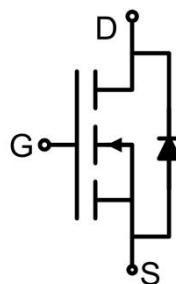
- Automotive lighting
- Load switch
- Uninterruptible power supply

Package

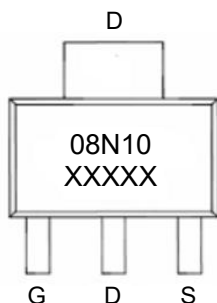


SOT-223

Circuit diagram



Marking



Absolute maximum ratings (Tc=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($V_{GS}=10V$)	I_D	8	A
Continuous Drain Current ($V_{GS}=10V$, $T_C=100^\circ C$)	$I_D(100^\circ C)$	6.5	A
Pulsed Drain Current ¹⁾	I_{DM}	24	A
Power Dissipation ³⁾	P_D	30	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	4.1	$^\circ C/W$
Junction Temperature	T_J	150	$^\circ C$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ C$

Electrical characteristics ($T_J=25^\circ C$, 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	100			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.5	2.5	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} =10V, I _D =5A		88	110	mΩ
		V _{GS} =4.5V, I _D =3A		96	140	
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f =1MHz		765		pF
Output Capacitance	C _{oss}			38		
Reverse Transfer Capacitance	C _{rss}			33		
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10V, I _D =5A		12		nC
Gate-Source Charge	Q _{gs}			2.2		
Gate-Drain Charge	Q _{gd}			2.5		
Turn-on delay time	t _{d(on)}	V _{DS} =30V, V _{GS} =10V, I _D =5A R _G =1.8Ω		7		nS
Turn-on rise time	t _r			5		
Turn-off delay time	t _{d(off)}			16		
Turn-off fall time	t _f			6		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				8	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =8A			1.2	V
Reverse Recovery Time	t _{rr}	I _F =8A, di/dt=100A/us		21		nS
Reverse Recovery Charge	Q _{rr}			21		nC

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2) The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- 3) The power dissipation is limited by 150°C junction temperature.
- 4) Guaranteed by design, not subject to production

Typical Characteristics

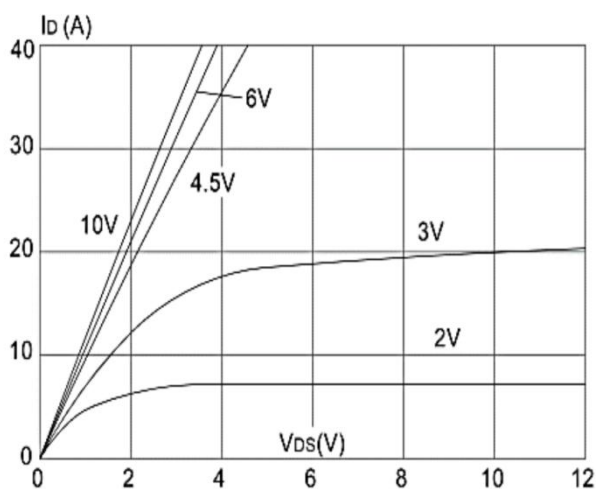


Figure1: Output Characteristics

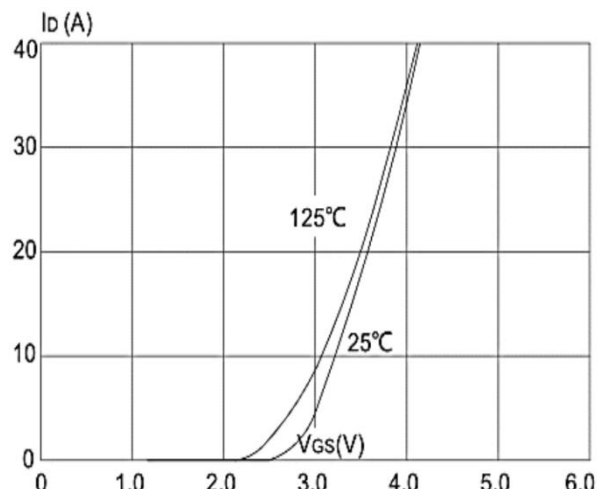


Figure 2: Typical Transfer Characteristics

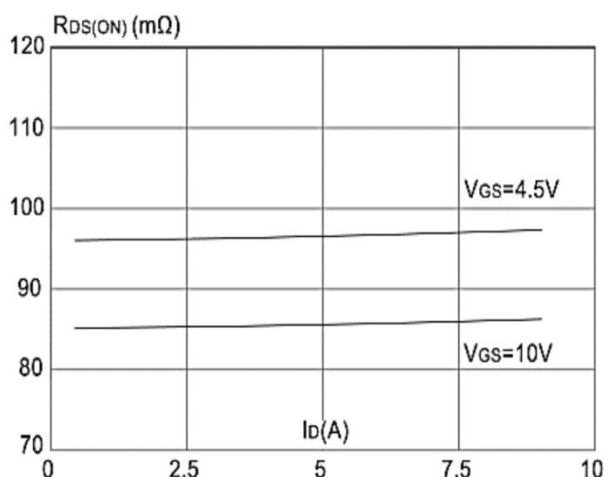


Figure 3: On-resistance vs. Drain Current

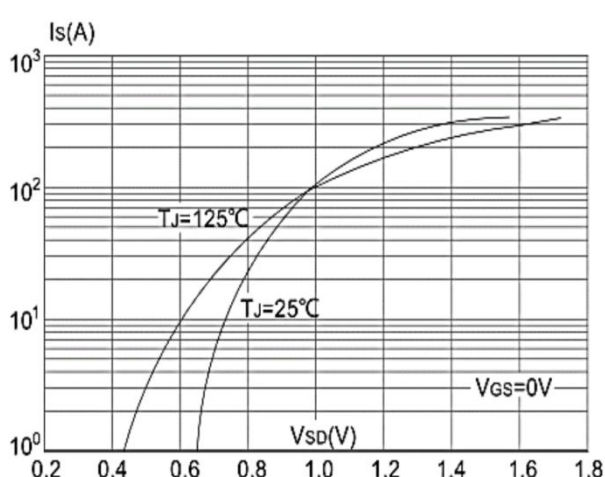


Figure 4: Body Diode Characteristics

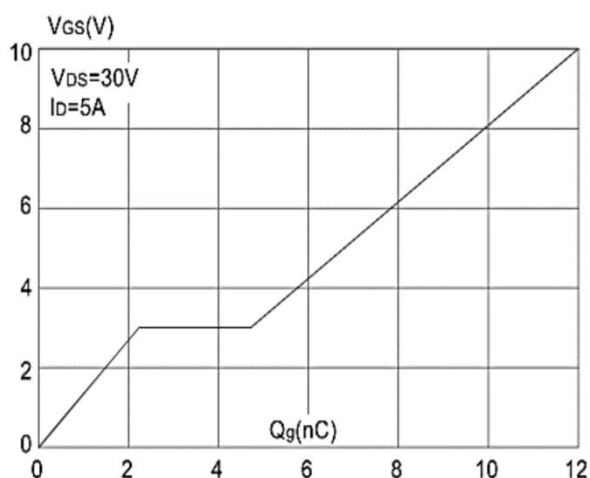


Figure 5: Gate Charge Characteristics

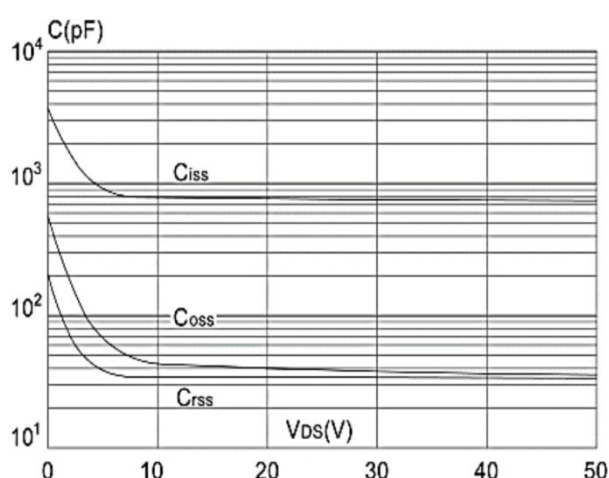


Figure 6: Capacitance Characteristics

Typical Characteristics

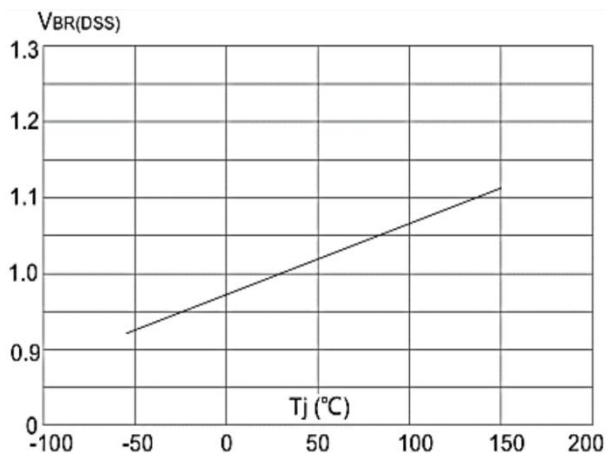


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

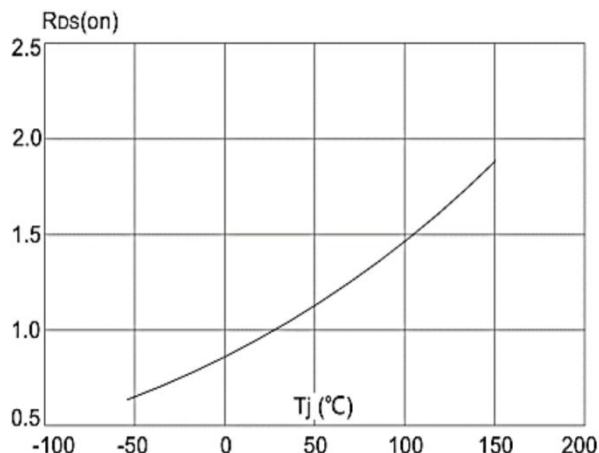


Figure 8: Normalized on Resistance vs. Junction Temperature

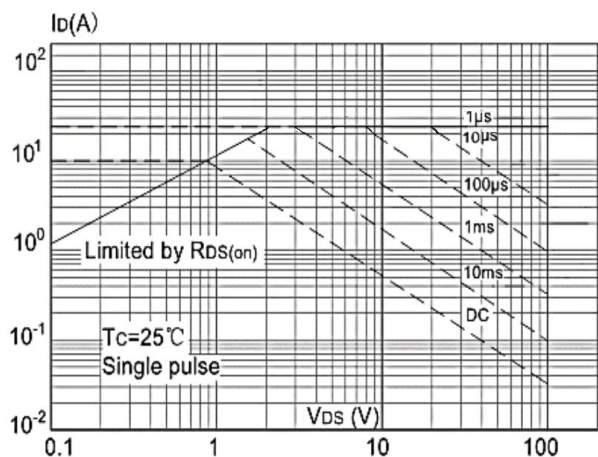


Figure 9: Maximum Safe Operating Area

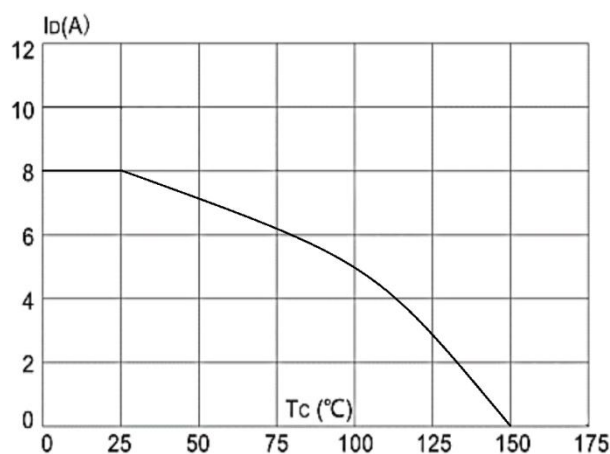


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

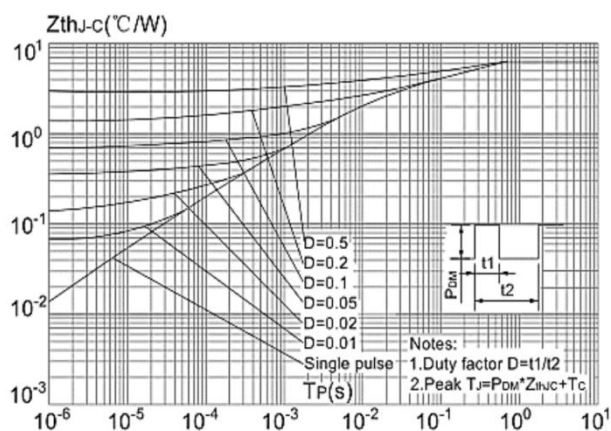
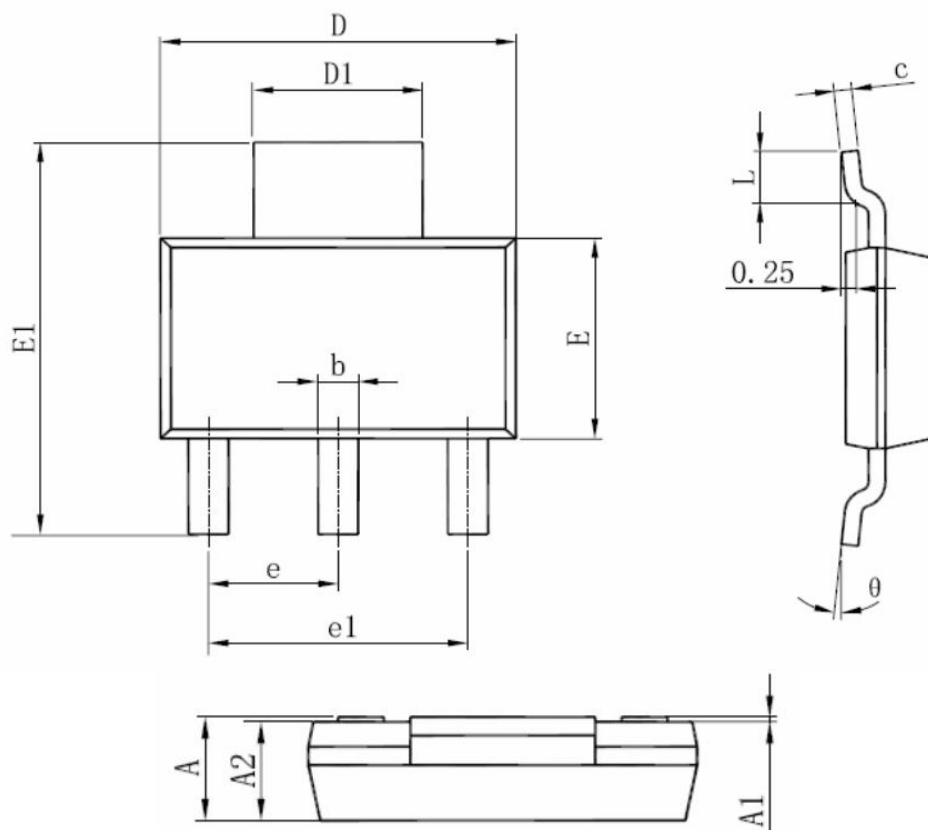


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

SOT-223 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.520	1.800	0.060	0.071
A1	0.000	0.120	0.000	0.005
A2	1.450	1.750	0.057	0.069
b	0.600	0.820	0.024	0.032
c	0.240	0.350	0.010	0.014
D	6.200	6.500	0.244	0.256
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.830	7.070	0.269	0.278
e	2.300 BSC.		0.091 BSC.	
e1	4.500	4.700	0.177	0.185
L	0.900	1.150	0.035	0.045
θ	0°	10°	0°	10°