

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	140mΩ@10V	6A

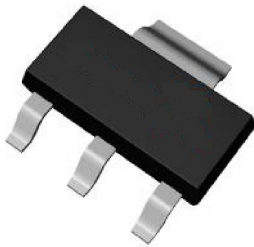
Feature

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

Application

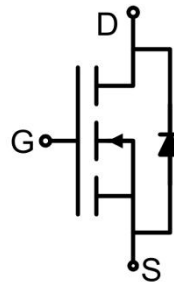
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package



SOT-223

Circuit diagram



Marking



Absolute maximum ratings (Ta=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	I _D	6	A
Continuous Drain Current(T _C =100°C)	I _D (100°C)	4.2	A
Pulsed Drain Current ¹⁾	I _{DM}	24	A
Power Dissipation	P _D	3	W
Thermal Resistance from Junction to Case ²⁾	R _{θJC}	41.7	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_A=25°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 _{GS} = ±20V, V _{DS} = 0V			±100	nA
Gate threshold voltage ³⁾	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.2	1.8	2.5	V
Drain-source on-resistance ³⁾	R _{DS(on)}	V _{GS} = 10V, I _D = 5A		103	140	mΩ
Forward Transconductance ³⁾	g _{FS}	V _{DS} = 10V, I _D = 5A		15		S
Dynamic characteristics⁴⁾						
Input Capacitance	C _{iss}	V _{DS} = 50V, V _{GS} = 0V, f = 1MHz		542		pF
Output Capacitance	C _{oss}			28.8		
Reverse Transfer Capacitance	C _{rss}			21.8		
Total Gate Charge	Q _g	V _{DS} = 50V, V _{GS} = 10V, I _D = 5A		17.4		nC
Gate-Source Charge	Q _{gs}			2.6		
Gate-Drain Charge	Q _{gd}			3.7		
Turn-on delay time	t _{d(on)}	V _{DD} = 50V, V _{GS} = 10V R _L = 15Ω, R _G = 2.5Ω		11		nS
Turn-on rise time	t _r			7.4		
Turn-off delay time	t _{d(off)}			35		
Turn-off fall time	t _f			9.1		
Source-Drain Diode characteristics						
Diode Forward Voltage ³⁾	V _{SD}	V _{GS} = 0V, I _S = 6A			1.2	V
Diode Forward Current ²⁾	I _S				6	A

Notes:

- 1) Repetitive Rating: Pulse width limited by maximum junction temperature
- 2) Surface Mounted on FR4 Board, t ≤ 10 sec.
- 3) Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
- 4) Guaranteed by design, not subject to production.

Typical Characteristics

Figure1. Source-Drain Diode Forward Voltage

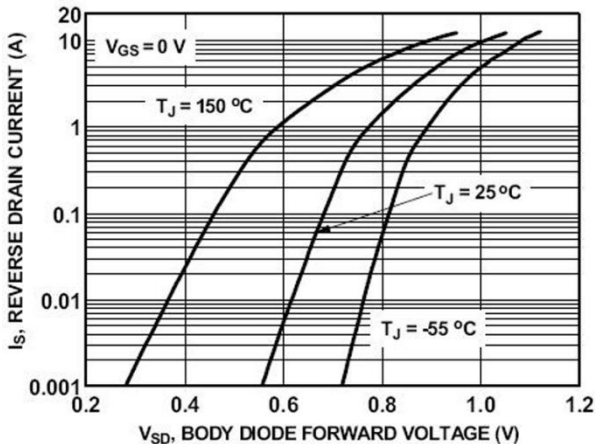


Figure2. Safe operating area

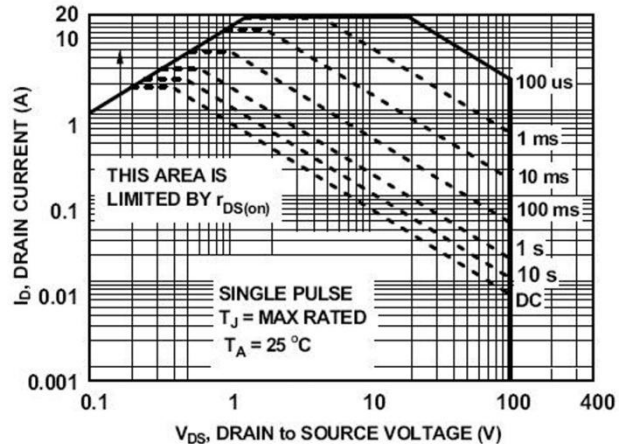


Figure3. Output characteristics

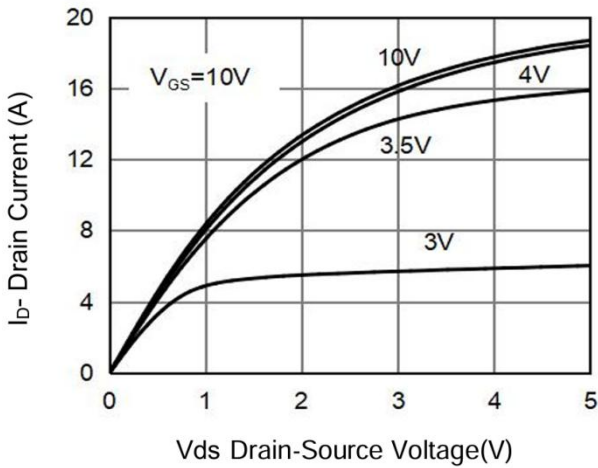


Figure4. Transfer characteristics

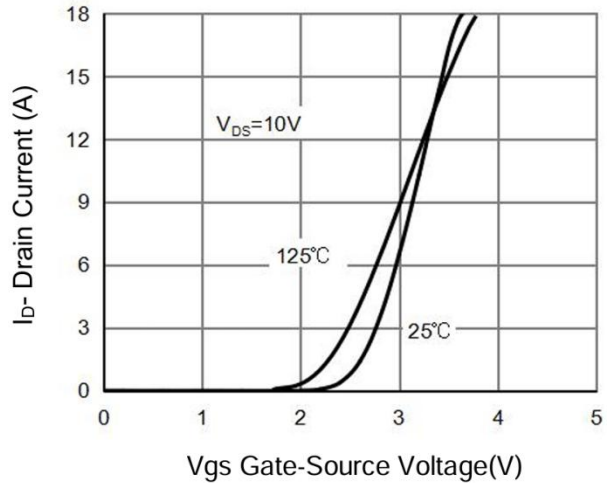


Figure5. Static drain-source on resistance

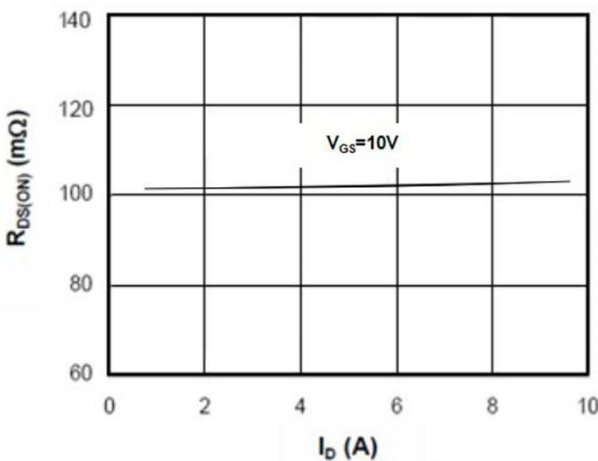
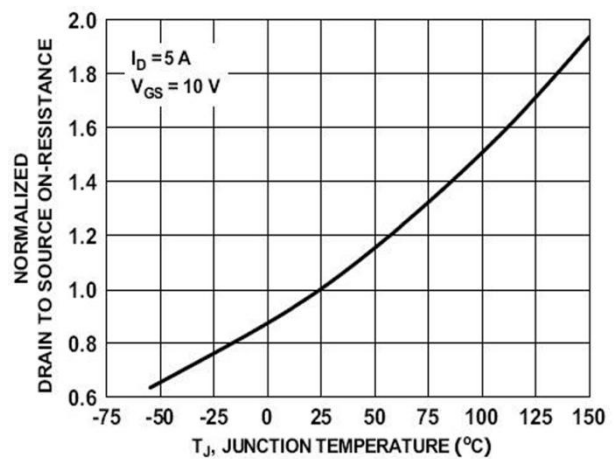


Figure6. $R_{DS(ON)}$ vs Junction Temperature



Typical Characteristics

Figure7. BV_{DSS} vs Junction Temperature

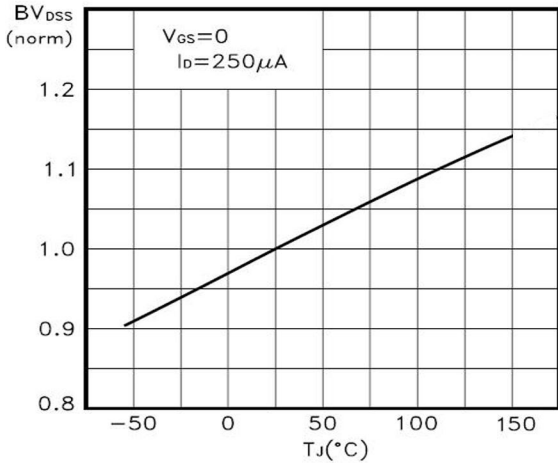


Figure8. $V_{GS(th)}$ vs Junction Temperature

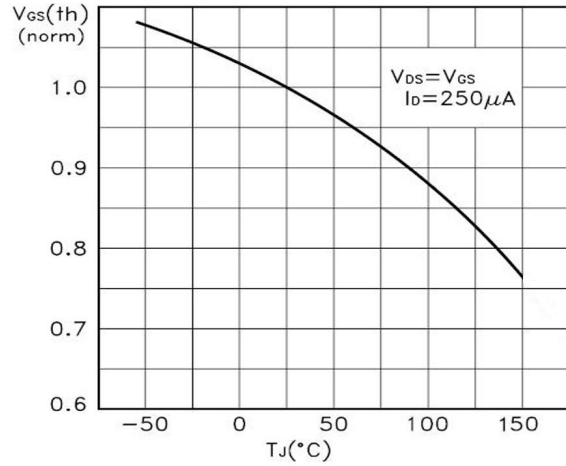


Figure9. Gate charge waveforms

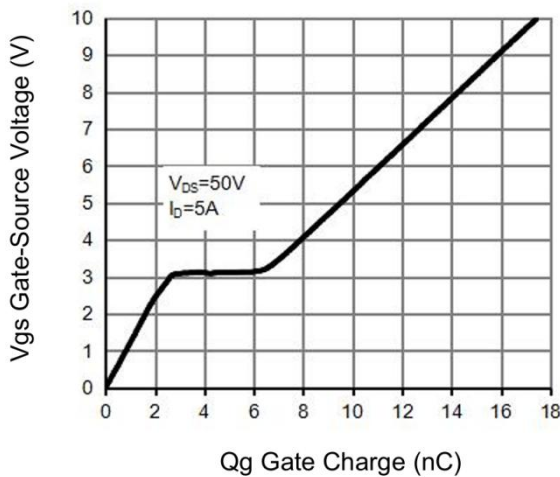


Figure10. Capacitance

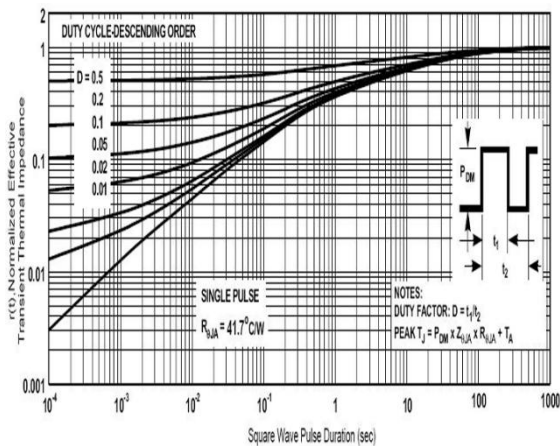
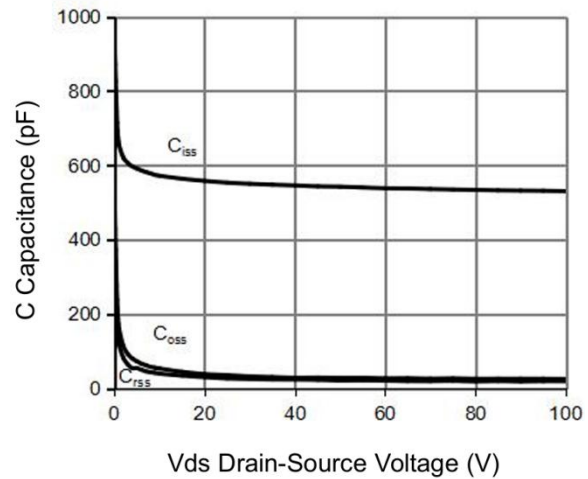


Figure11. Normalized Maximum Transient Thermal Impedance

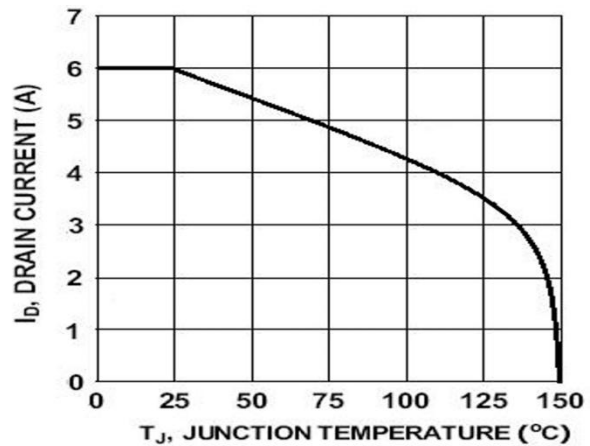
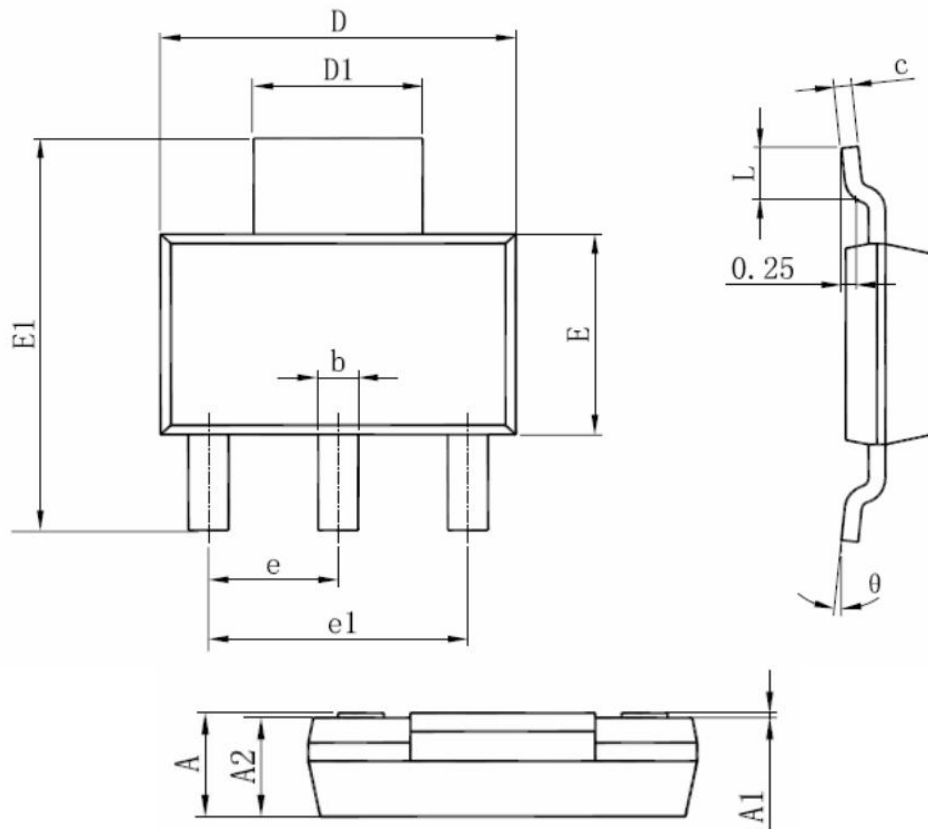


Figure12. I_D vs Junction Temperature

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	6.700	7.300	0.264	0.287
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°