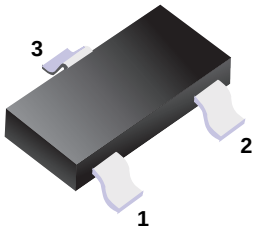
N-Channel MOSFET

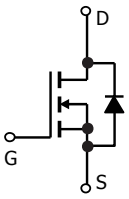


1. Gate
2. Source
3. Drain

Features

- $V_{DS\ (V)}$ = 100V
- I_D = 0.17 A (V_{GS} = 10V)
- $R_{DS(ON)}$ < 6Ω (V_{GS} = 10V)
- $R_{DS(ON)}$ < 10Ω (V_{GS} = 4.5V)
- ESD Protected 2KV HBM

Simplified outline(SOT-23)



Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current	I_D	0.17	A
Pulsed Drain Current	I_{DM}	0.68	
Power Dissipation	P_D	0.36	W
Derate Above 25°C		2.8	mW/℃
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	350	°C/W
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{stg}	-55 to 150	

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V			1	μA
		V_{DS}=100V, V_{GS}=0V, T_J=55℃			60	
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±10	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=1mA	0.8		2.8	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=0.17A			6	Ω
		V_{GS}=10V, I_D=0.17A T_J=125℃			12	
		V_{GS}=4.5V, I_D=0.17A			10	
On State Drain Current	$I_{D(ON)}$	V_{GS}=10V, V_{DS}=5V	0.68			A
Forward Transconductance	g_{FS}	V_{DS}=10V, I_D=0.17A	0.08			S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz		73		pF
Output Capacitance	C_{oss}			7		
Reverse Transfer Capacitance	C_{rss}			3.4		
Gate Resistance	R_g	V_{GS}=15mV, f=1MHz		2.2		Ω
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=30V, I_D=0.22A		1.8	2.5	nC
Gate Source Charge	Q_{gs}			0.2		
Gate Drain Charge	Q_{gd}			0.3		
Turn-On DelayTime	$t_{d(on)}$	V_{DD} = 30 V, I_D = 0.28 A, V_{GS} = 10 V, R_{GEN} = 6 Ω		1.7	3.4	ns
Turn-On Rise Time	t_r			9	18	
Turn-Off DelayTime	$t_{d(off)}$			17	31	
Turn-Off Fall Time	t_f			2.4	5	
Body Diode Reverse Recovery Time	t_{rr}	I_F= 0.17A, dI/dt= 100A/μs		11		
Body Diode Reverse Recovery Charge	Q_{rr}			3		nC
Maximum Body-Diode Continuous Current	I_S				0.17	A
Diode Forward Voltage	V_{SD}	I_S=0.34A,V_{GS}=0V			1.3	V

Note.: Pulse Test: Pulse Width ≤ 300 us, Duty Cycle ≤ 2.0%

■ Typical Characterisitics

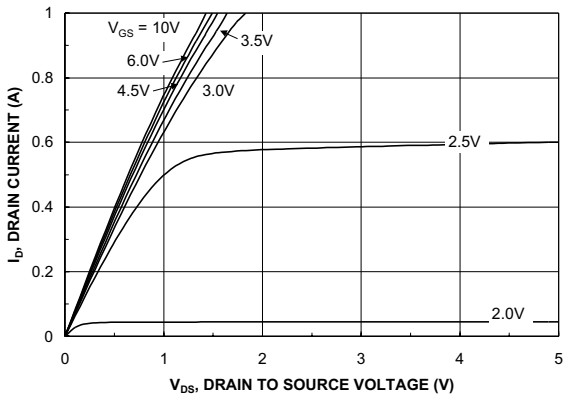


Figure 1. On-Region Characteristics.

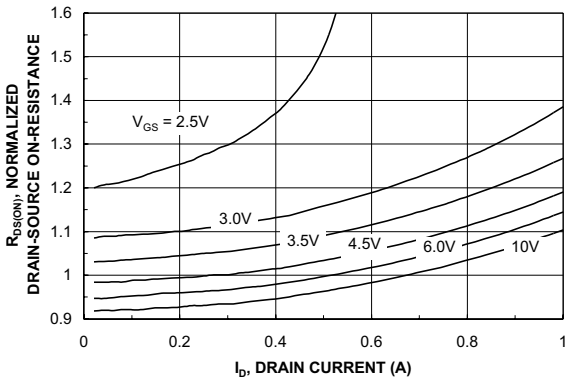


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage.

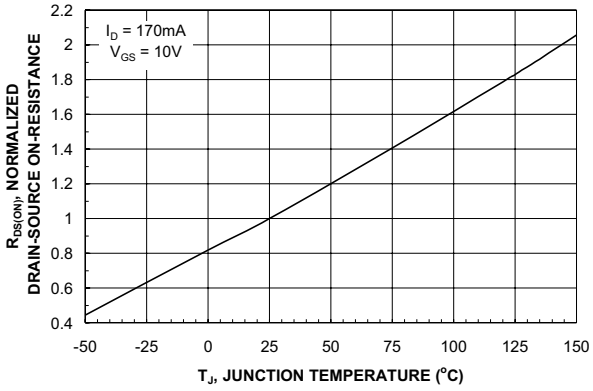


Figure 3. On-Resistance Variation with Temperature.

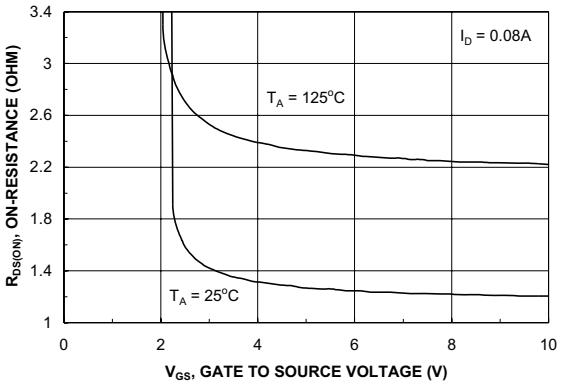


Figure 4. On-Resistance Variation with Gate-to-Source Voltage.

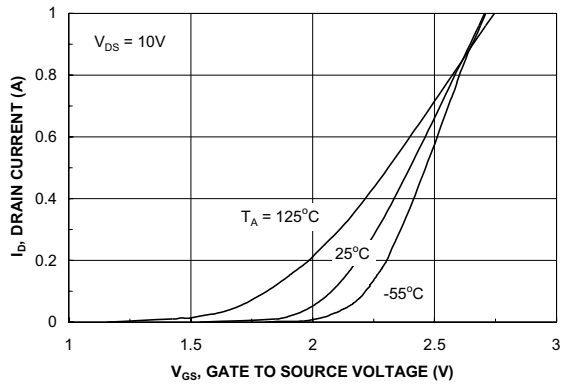


Figure 5. Transfer Characteristics.

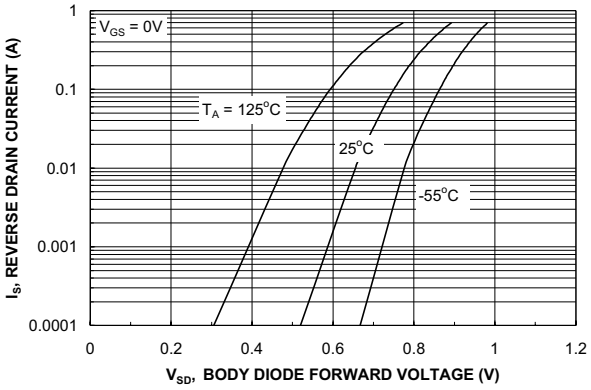


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature.

■ Typical Characterisitics

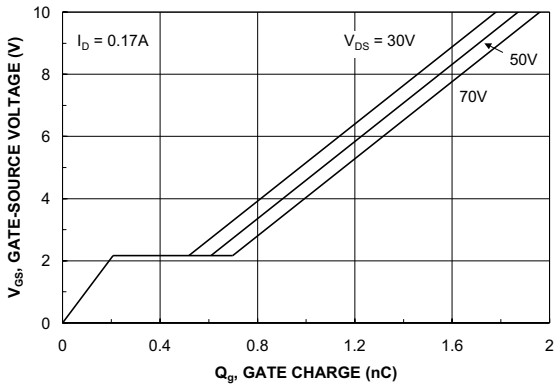


Figure 7. Gate Charge Characteristics.

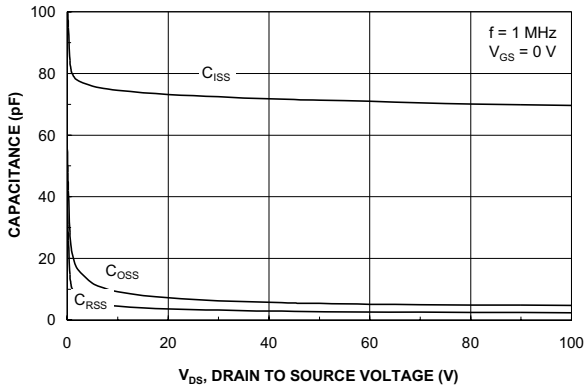


Figure 8. Capacitance Characteristics.

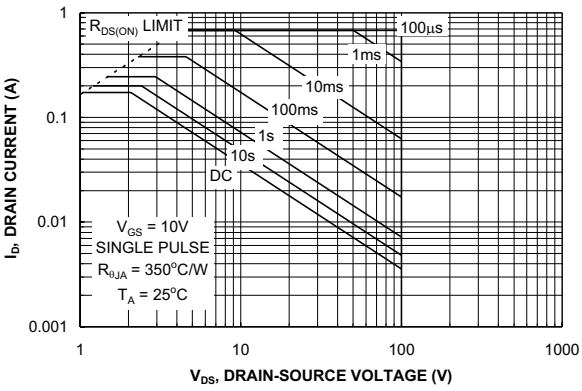


Figure 9. Maximum Safe Operating Area.

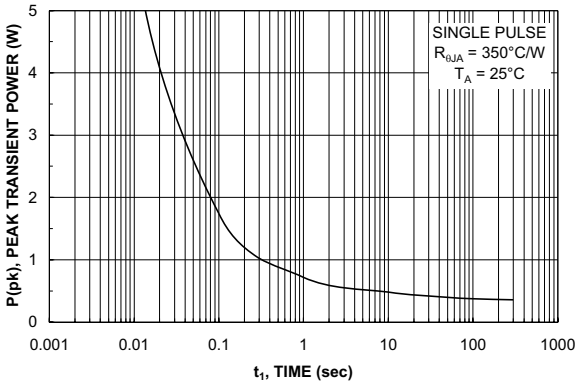
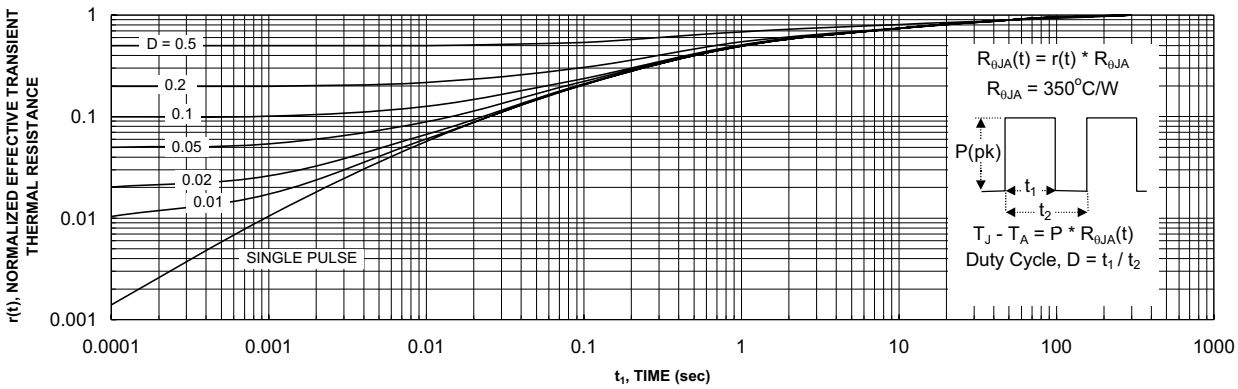
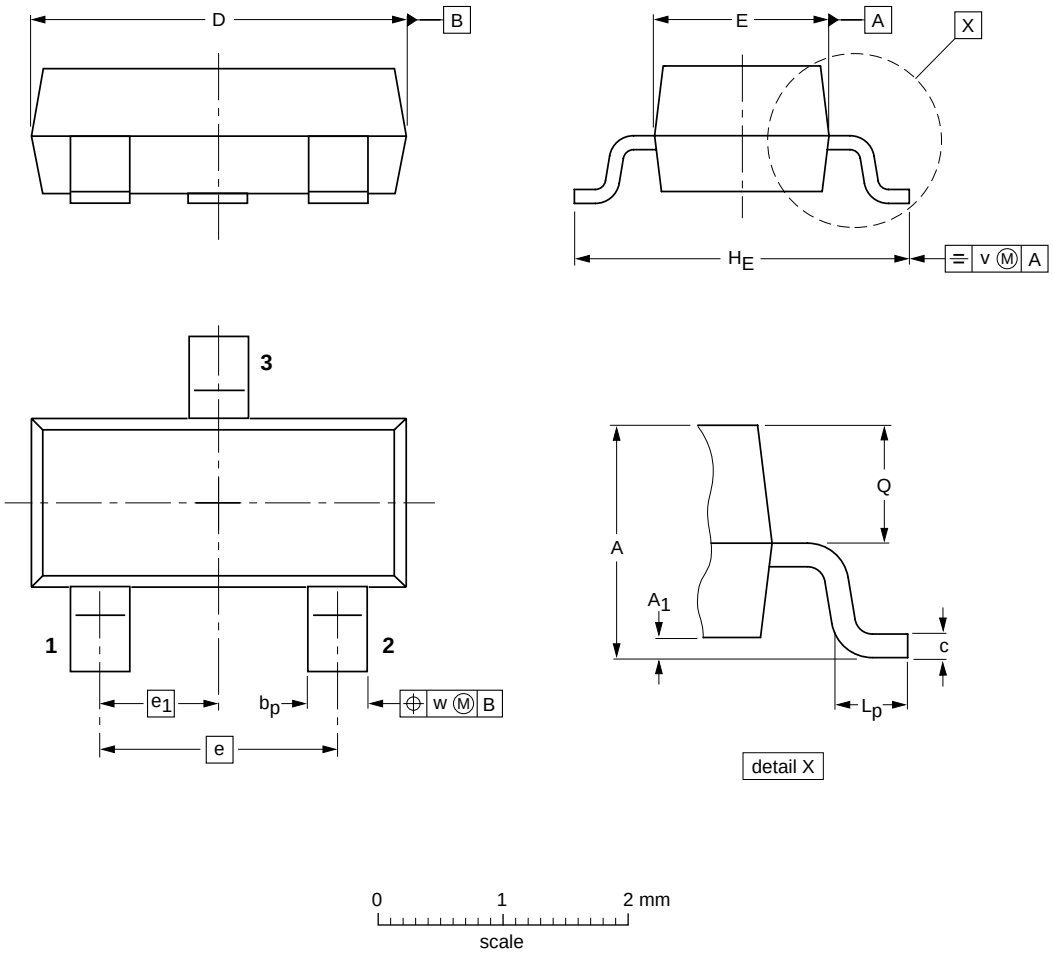


Figure 10. Single Pulse Maximum Power Dissipation.



■ SOT-23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max.	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1