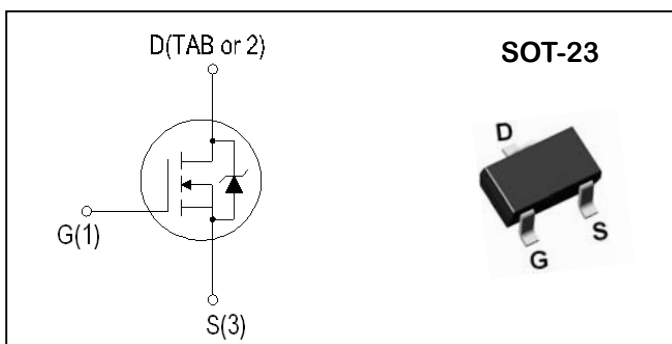


N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

V_{DSS}	I_D	$R_{DS(ON)}$ (m Ω)
30V	4.0A	58m Ω



Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter		Ratings	Unit
Common Ratings				
V _{DSS}	Drain-Source Voltage		30	V
V _{GSS}	Gate-Source Voltage		±20	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current (3)	TC=25°C	1.25	A
Mounted on Large Heat Sink				
I _{DM}	300μs Pulse Drain Current Tested(1)	TC=25°C	10	A
I _D	Continuous Drain Current	TC=25°C	10	A
		TC=125°C	4	A
P _D	Maximum Power Dissipation (3)		1.25	W

1. Pulse width limited by maximum junction temperature.

Thermal Characteristics

Symbol	Parameter	Ratings	Unit
R_{thJA}	Thermal resistance junction-ambient max (3)	100	$^\circ\text{C/W}$

Electrical Characteristics (TA=25°C Unless Otherwise Noted)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
On/off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250uA	30	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 24V, V _{GS} =0V	--	--	1	uA
		V _{DS} =24V, V _{GS} =0V T _J =55°C	--	--	10	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250uA	0.8	--	1.6	V
I _{GSS}	Gate Leakage Current	V _{GS} = ± 20V, V _{DS} =0V	--	--	± 100	nA
R _{DS(ON)}	Drain-SourceOn-stateResistance(2)	V _{GS} = 10V, I _{DS} =2.7A	--	48	58	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} = 15V, Frequency=1.0MHz	--	350	--	pF
C _{oss}	Output Capacitance		--	55	--	
C _{rss}	Reverse Transfer Capacitance		--	41	--	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time(1)	V _{DD} =15V, I _D = 1A, V _{GS} = 10V, R _{GEN} =6 Ω	--	2.5	--	ns
t _r	Turn-on Rise Time(1)		--	2.5	--	
t _{d(OFF)}	Turn-off Delay Time(1)		--	20	--	
t _f	Turn-off Fall Time(1)		--	4	--	
Q _g	Total Gate Charge(1)	V _{DS} =15V, V _{GS} = 5V, I _{DS} =2.7A	--	4.2	--	nC
Q _{gs}	Gate-Source Charge(1)		--	0.6	--	
Q _{gd}	Gate-Drain Charge(1)		--	1.5	--	
Diode Characteristics						
V _{SD}	Diode Forward Voltage(2)	I _{SD} = 0.42A, V _{GS} = 0	--	0.7	1.2	V

NOTES:

1. Independent of operating temperature.
2. Pulse Test : Pulse width ≤ 300 μs, Duty cycle ≤ 2%
3. Surface Mounted on FR4 Board, t < 10 sec.

Typical Performance Characteristics

Figure 1: Output Characteristics

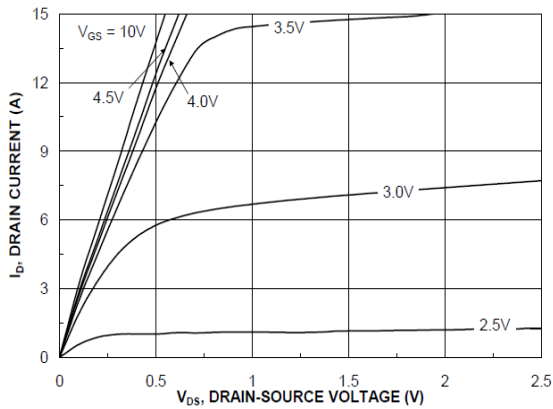


Figure 2: Transfer Characteristics

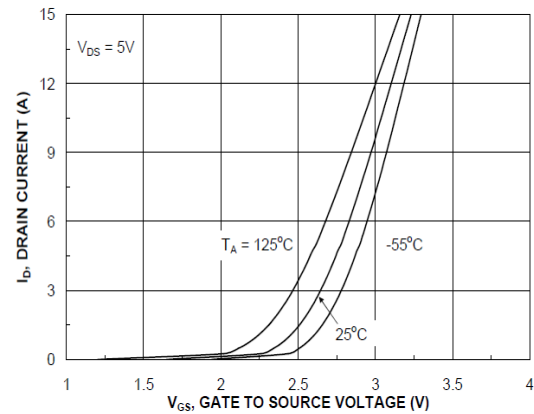


Figure 3: On-Resistance Variation with Drain Current and Gate Voltage.

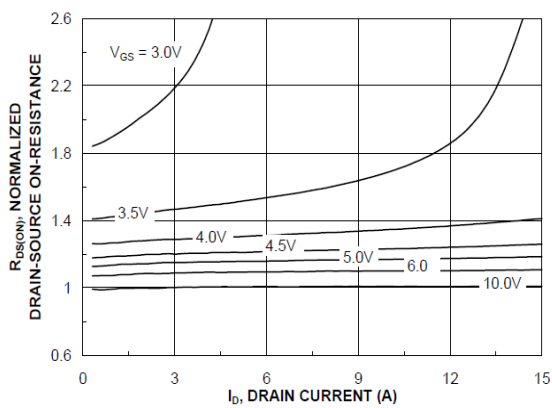


Figure 4: On-Resistance Variation with Temperature

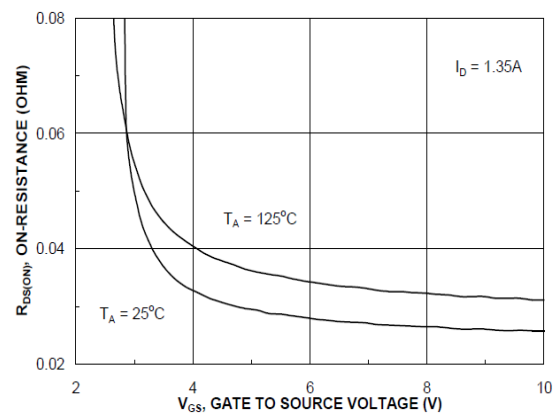


Figure 5: On-Resistance Variation with Temperature.

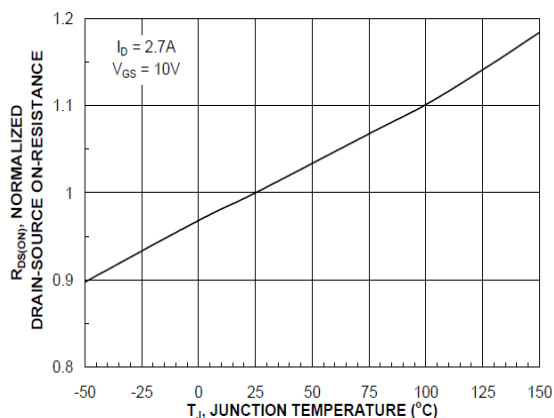


Figure 6: Body Diode Forward Voltage Variation with Source Current

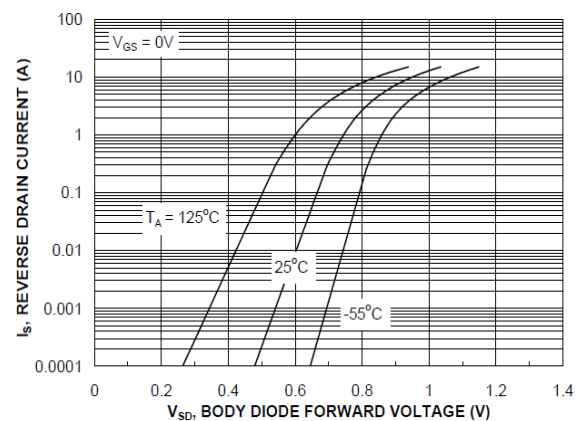


Figure 7: Gate Charge

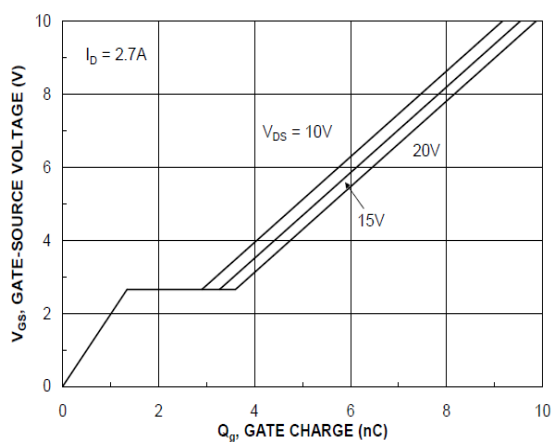


Figure 8: Maximum Safe Operating Area

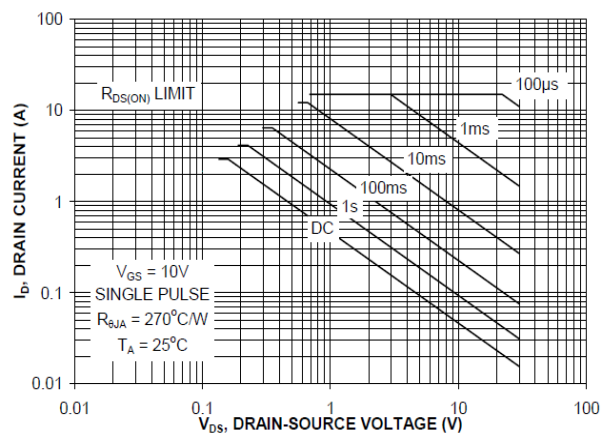
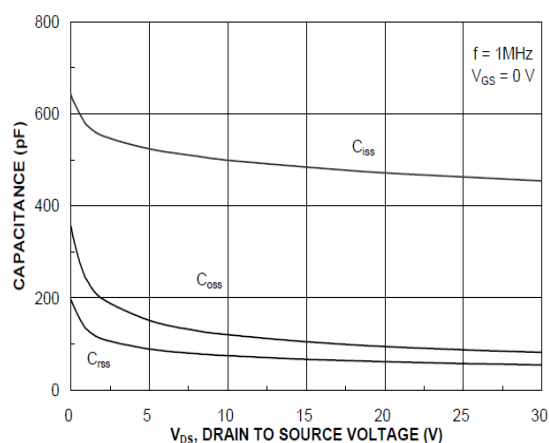
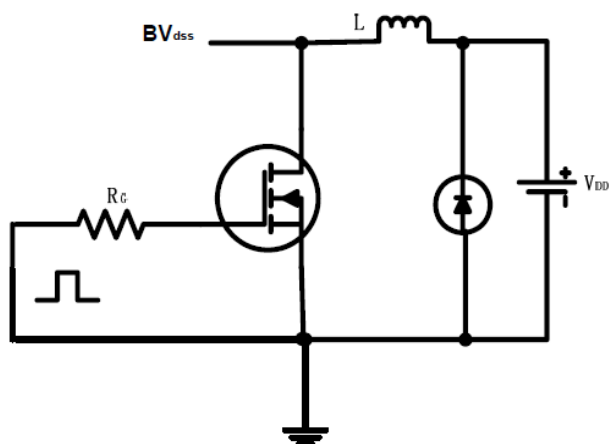


Figure 9: Capacitance Characteristics.

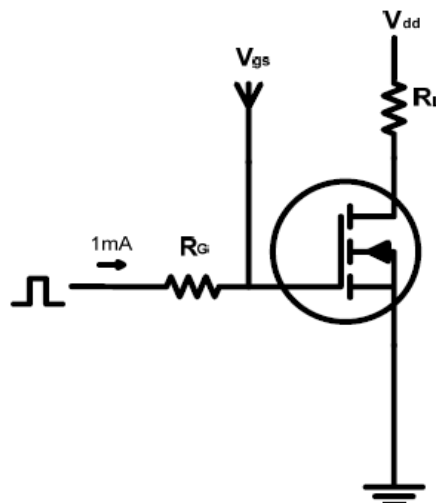


Test circuits and Waveforms

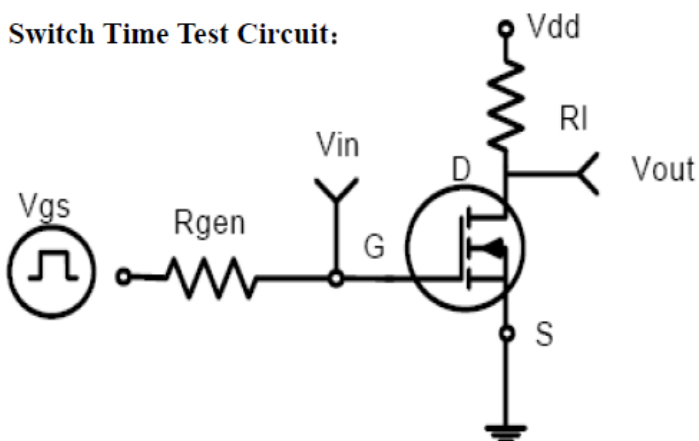
EAS test circuits:



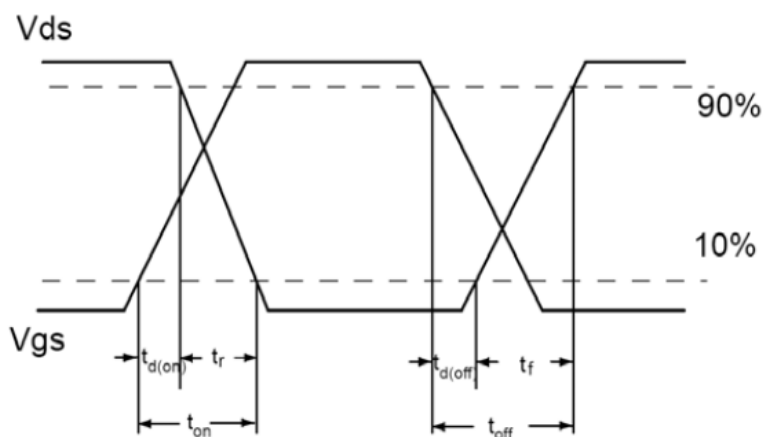
Gate charge test circuit:



Switch Time Test Circuit:

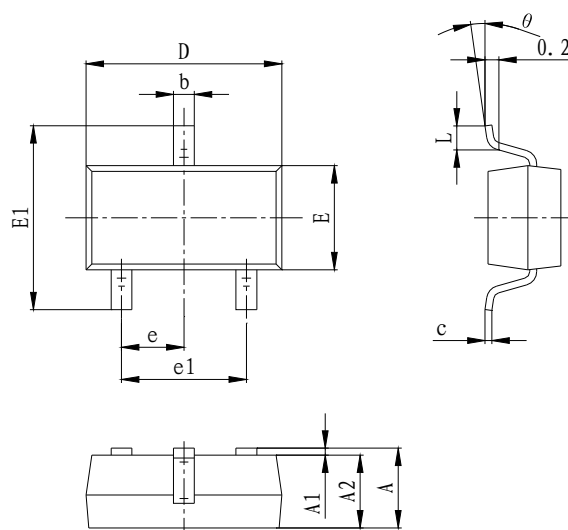


Switch Waveforms:



PACKAGE MECHANICAL DATA

SOT-23 Package Dimension



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	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
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
θ	0°	8°	0°	8°