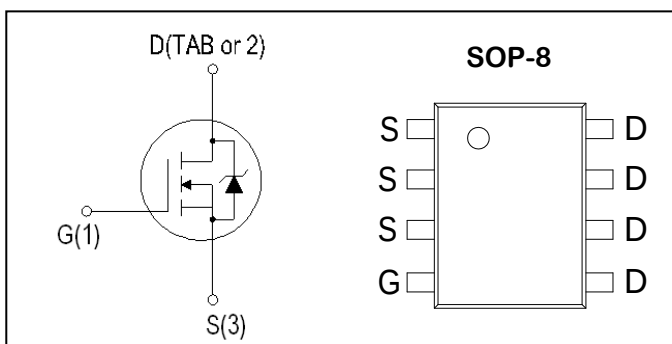


N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

V_{DSS}	I_D	$R_{DS(ON)}$ (m Ω)
30V	15A	4.0m 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		175	°C
T _{STG}	Storage Temperature Range		-55 to 175	°C
I _S	Diode Continuous Forward Current	TC=25°C	15	A
Mounted on Large Heat Sink				
I _{DM}	300μs Pulse Drain Current Tested(1)	TC=25°C	75	A
I _D	Continuous Drain Current	TC=25°C	15	A
P _D	Maximum Power Dissipation	TC=25°C	1.5	W

1. Pulse width limited by maximum junction temperature.

Thermal Characteristics

Symbol	Parameter	Ratings	Unit
R_{thJC}	Thermal resistance junction-case max	24	$^\circ\text{C/W}$
R_{thJA}	Thermal resistance junction-ambient max	85	$^\circ\text{C/W}$

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	--	--	5	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250uA	1.0	1.5	2.5	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} =15A	--	3.4	4.0	mΩ
g _{FS}	Forward transconductance(2)	V _{DS} = 5V, I _{DS} =15A	--	26.5	--	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} =0V,	--	3075	--	pF
C _{oss}	Output Capacitance	V _{DS} = 15V,	--	400	--	
C _{rss}	Reverse Transfer Capacitance	Frequency=1.0MHz	--	315	--	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time(1)	V _{DD} =15V,	--	11.2	--	ns
t _r	Turn-on Rise Time(1)	I _D = 15A, V _{GS} = 10V,	--	49	--	
t _{d(OFF)}	Turn-off Delay Time(1)	R _{GEN} =1.5 Ω	--	35	--	
t _f	Turn-off Fall Time(1)		--	7.8	--	
Q _g	Total Gate Charge(1)	V _{DS} =20V, V _{GS} = 4.5V,	--	31.6	--	nC
Q _{gs}	Gate-Source Charge(1)	I _{DS} =12A	--	6.1	--	
Q _{gd}	Gate-Drain Charge(1)		--	13.8	--	
Diode Characteristics						
V _{SD}	Diode Forward Voltage(2)	I _{SD} = 1A, V _{GS} = 0	--	--	1	V
t _{rr}	Reverse Recovery Time	I _{SD} =30A, dI _{SD} /dt=100A/μs	--	13.3	--	ns
q _{rr}	Reverse Recovery Charge		--	4.5	--	nC

NOTES:

1. Independent of operating temperature.
2. Pulse Test : Pulse width ≤ 300 μs, Duty cycle ≤ 2%

Typical Performance Characteristics

Figure 1: On-Region Characteristics

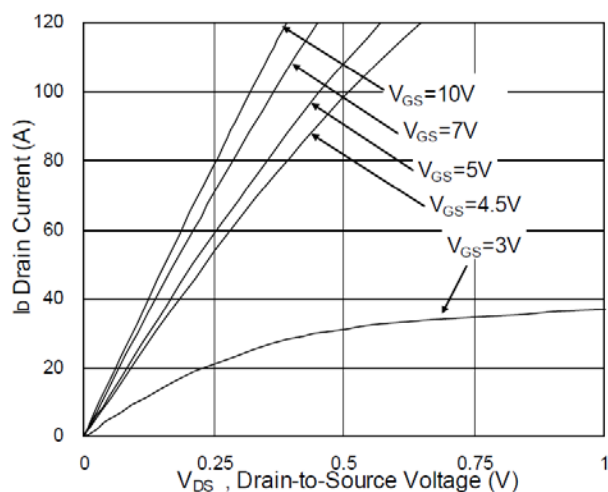


Figure 2: On-Resistance vs. G-S Voltage

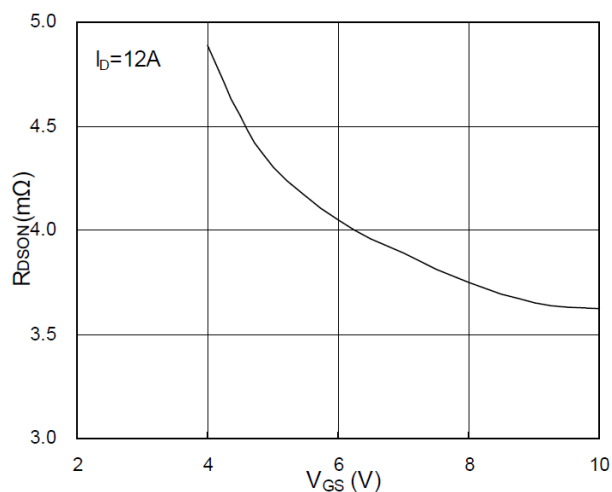


Figure 3: Forward Characteristics of Reverse

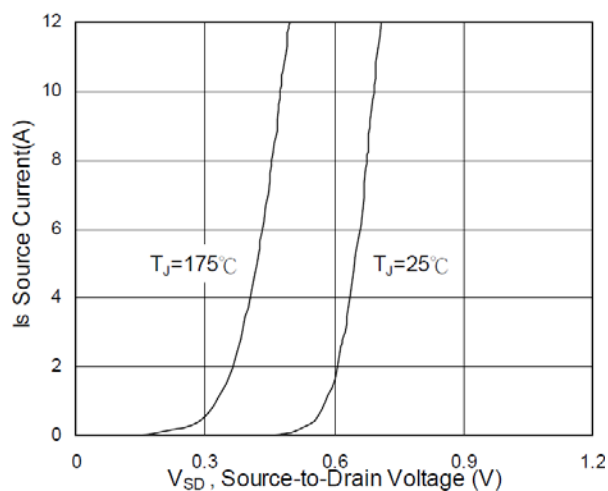


Figure 4: Normalized $V_{GS(th)}$ vs. T_J

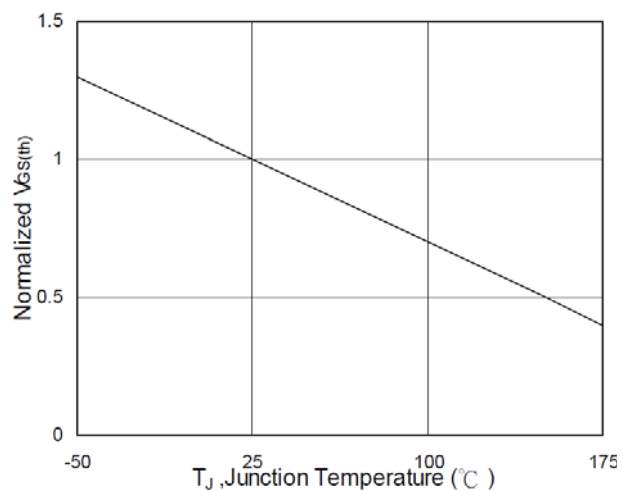


Figure 5: Normalized $R_{DS(on)}$ vs. T_J

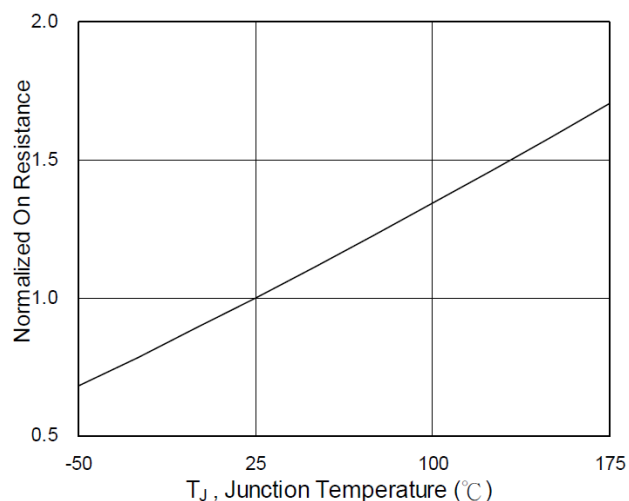


Figure 6: Gate Charge Characteristics

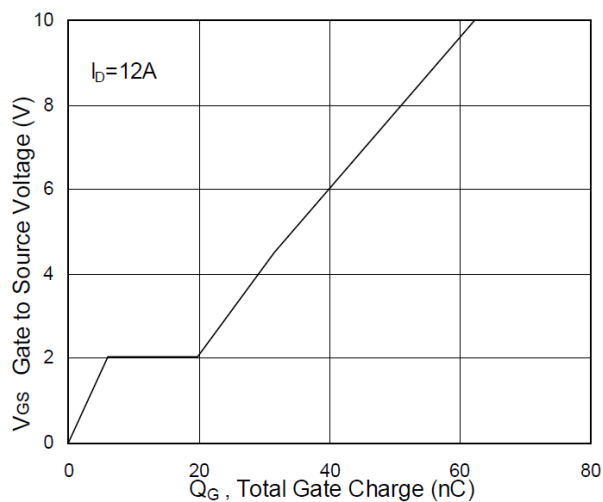


Figure 7: Capacitance

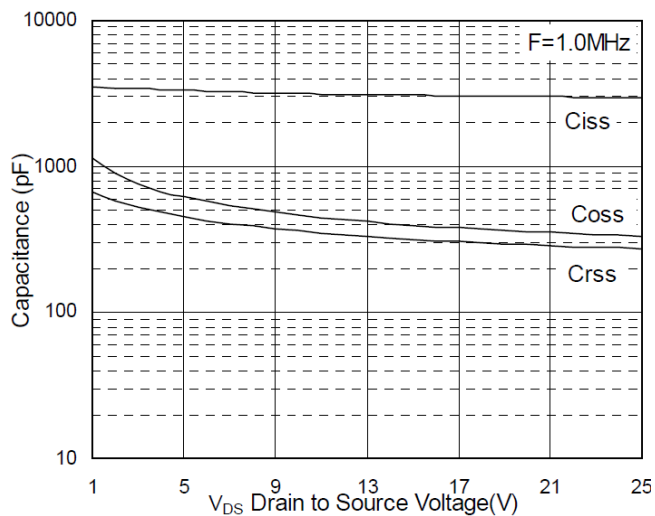


Figure 8: Safe Operating Area

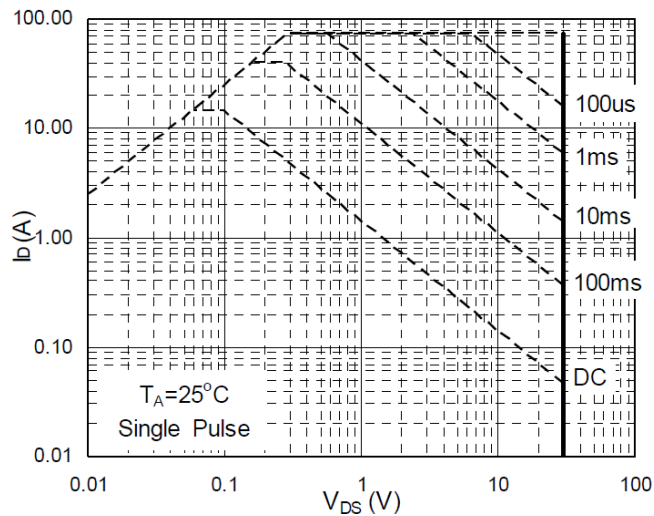
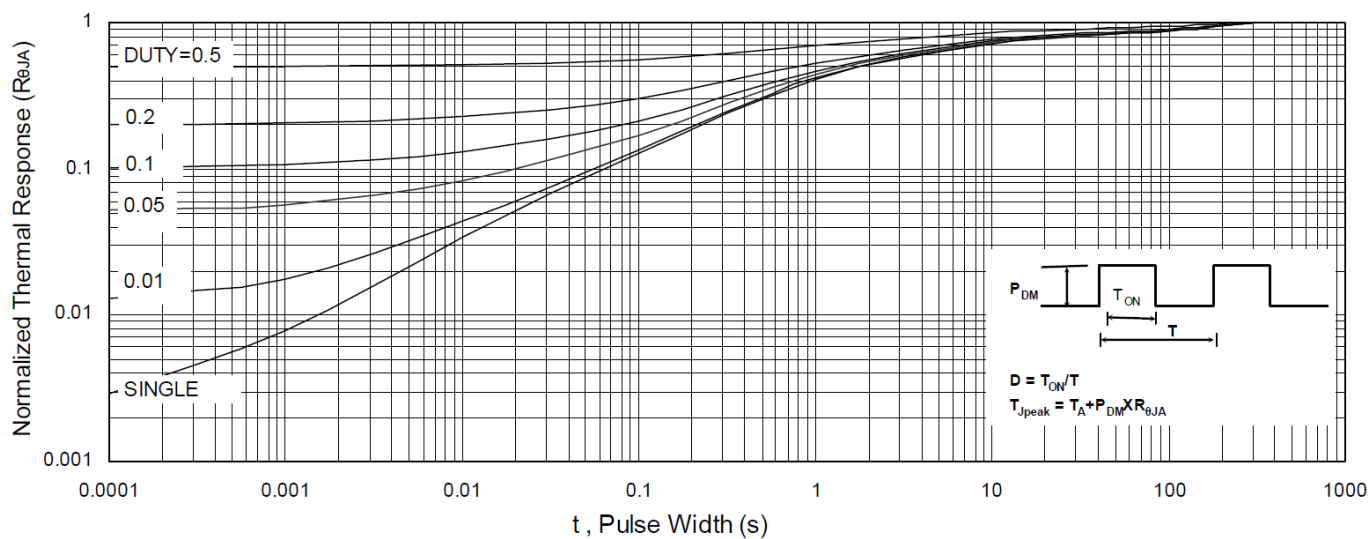
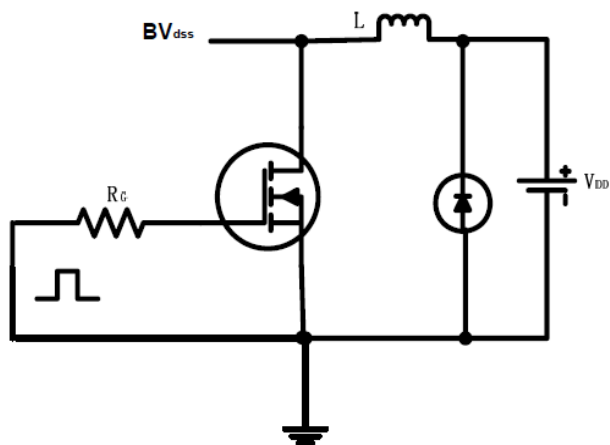


Figure 9: Normalized Maximum Transient Thermal Impedance

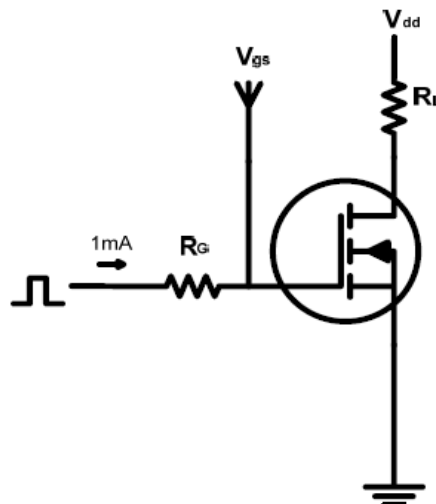


Test circuits and Waveforms

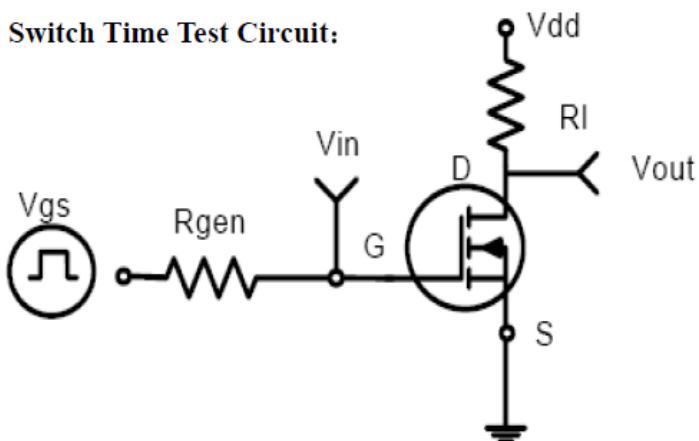
EAS test circuits:



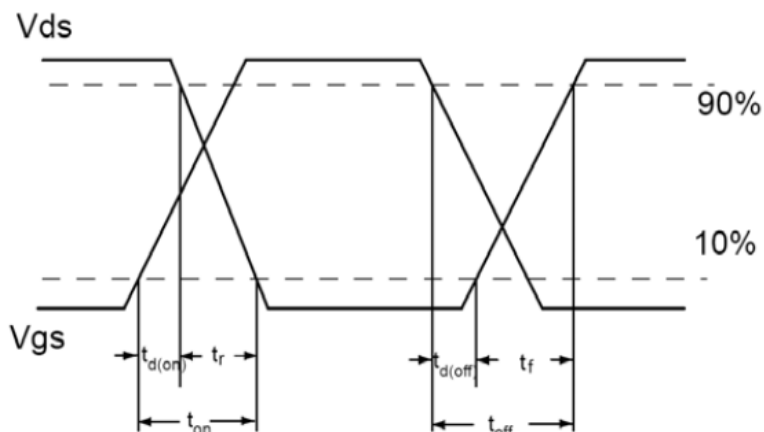
Gate charge test circuit:



Switch Time Test Circuit:

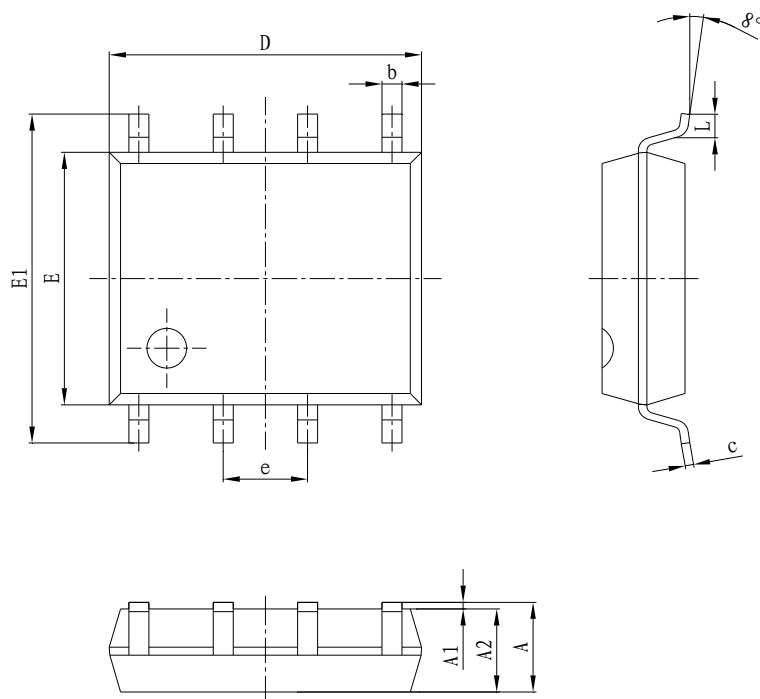


Switch Waveforms:



PACKAGE MECHANICAL DATA

SOP-8 Package Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E1	5.800	6.200	0.228	0.244
E	3.800	4.000	0.150	0.157
e	1.270TYP		0.050TYP	
e1	4.500	4.700	0.177	0.185
L	0.400	1.270	0.016	0.050