Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	8mΩ@10V	10A
	12mΩ@4.5V	
-30V	22mΩ@-10V	-8A
	27mΩ@-4.5V	

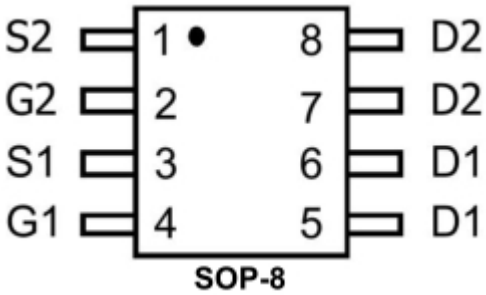
Feature

- TrenchFET Power MOSFET
- Excellent RDS(on) and Low Gate Charge

Applications

- Bridge
- Inverters

Package



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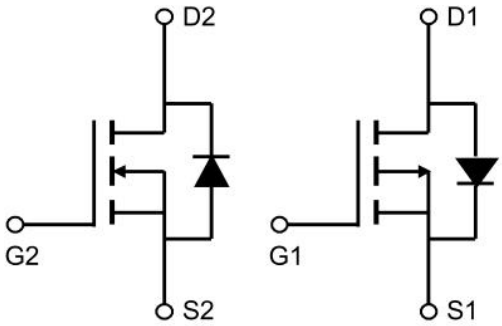
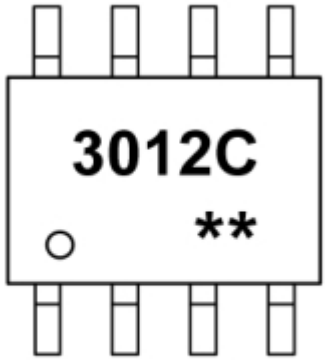
Circuit diagram



Marking



3012C = Device code

** = Week Code

Absolute maximum ratings

(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value		Unit
		N-Channel	P-Channel	
Drain-Source Voltage	V_{DS}	30	-30	V
Gate-Source Voltage	V_{GS}	±20	±20	V
Continuous Drain Current(t≤10s)	I_D	10	-8	A
Power Dissipation(t≤10s)	P_D	2	2	W
Thermal Resistance from Junction to Ambient(t≤10s)	$R_{\theta JA}$	62.5		℃/W
Junction Temperature	T_J	150		℃
Storage Temperature	T_{STG}	-55~ +150		℃

N-Channel Electrical characteristics

(T_A=25℃, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$BV_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =30V, V_{GS} = 0V			1	uA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	uA
Gate threshold voltage (1)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1	1.5	2.2	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =8A		8	13	mΩ
		V_{GS} =4.5V, I_D =6A		12	17	
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V, f=1MHz		1371	1845	pF
Output capacitance	C_{oss}			163	228.2	
Reverse transfer capacitance	C_{rss}			131	183.4	
Switching Characteristics						
Turn-on Delay Time	$T_{d(on)}$	V_{GEN}=10V, V_{DD}=15V, R_{GEN}=1.2Ω		6.2	12.4	nS
Turn-on Rise Time	T_r			59	120	
Turn-Off Delay Time	$T_{d(off)}$			27.6	55	
Turn-Off Fall Time	t_f			8.4	16.8	
Total gate charge	Q_g	V_{DS} =15V, V_{GS} =4.5V, I_D =11.5A		12.6	17.6	nC
Gate-source charge	Q_{gs}			4.2	5.9	
Gate-drain charge	Q_{gd}			5.1	7.1	
Source-Drain Diode Characteristics						
Body Diode Voltage	V_{SD}	I_S=10A, V_{GS} = 0V			1.2	V

Notes:

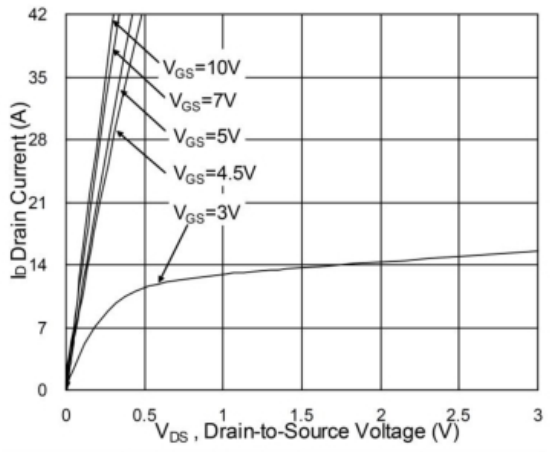
1. Repetitive rating: Pulse width limited by junction temperature.
2. Surface mounted on FR4 board, t≤10s.
3. Pulse Test: Pulse Width≤80μs, Duty Cycle≤0.5%.
4. Guaranteed by design, not subject to producting.

P-Channel Electrical characteristics

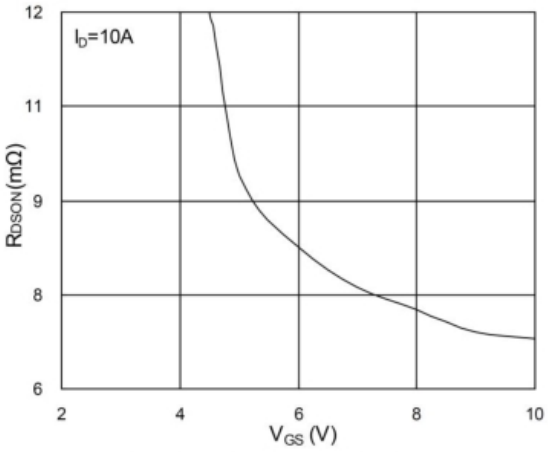
(T_A=25℃, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$BV_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-24V, V_{GS} = 0V , T_J=25℃			1	uA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	uA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1.0		-2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =-10V, I_D =-6A		22	30	mΩ
		V_{GS} =-4.5V, I_D =-4A		27	45	
Dynamic Characteristics						
Total gate charge	Q_g	V_{DS} =-20V, V_{GS} =-4.5V, I_D =-12A		9.8		nC
Gate-source charge	Q_{gs}			2.2		
Gate-drain charge	Q_{gd}			3.4		
Turn-on Delay Time	$T_{d(on)}$	V_{DD}=-24V, V_{GS}=-10V, R_G =3.3Ω , I_D =-1A		16.4		nS
Turn-on Rise Time	T_r			20.2		
Turn-Off Delay Time	$T_{d(off)}$			55		
Turn-Off Fall Time	t_f			10		
Input capacitance	C_{iss}	V_{DS}=-15V, V_{GS}=-4.5V, f=1MHz		930		pF
Output capacitance	C_{oss}			148		
Reverse transfer capacitance	C_{rss}			115		
Source-Drain Diode Characteristics						
Body Diode Voltage	V_{SD}	I_S=-1A, V_{GS} = 0V, T_J=25℃			-1.2	V

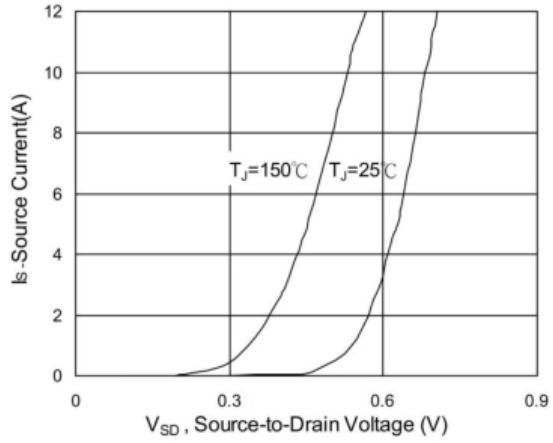
N-Channel Typical Characteristics



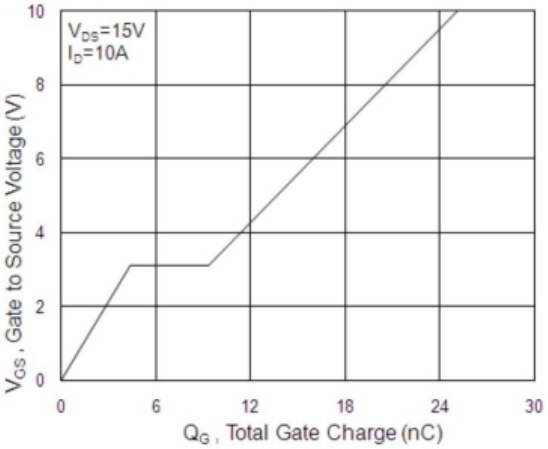
Typical Output Characteristics



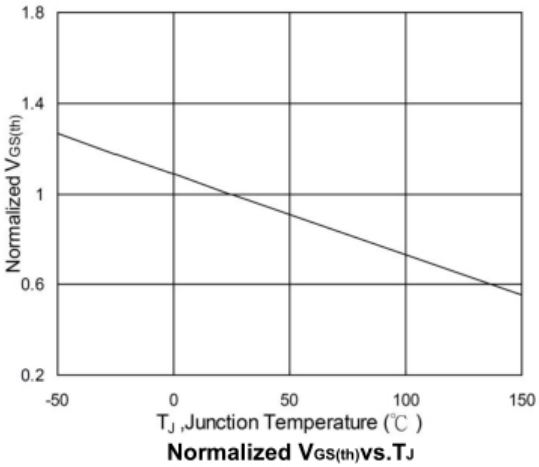
On-Resistance vs.Gate-Source



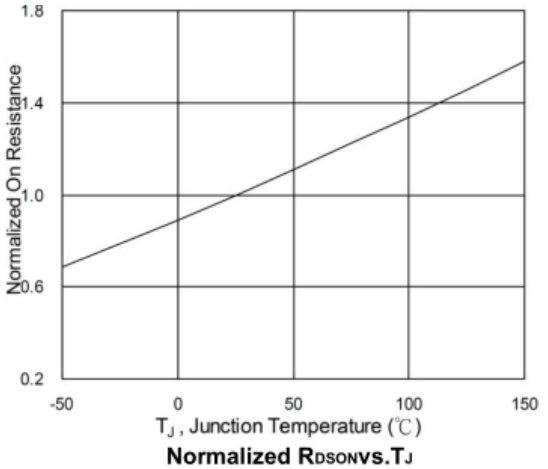
Forward Characteristics of reverse



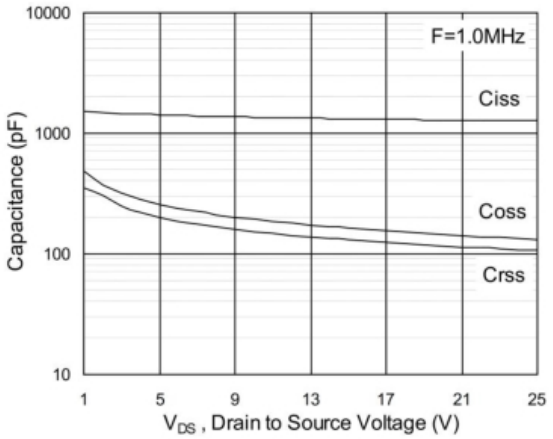
Gate-Charge Characteristics



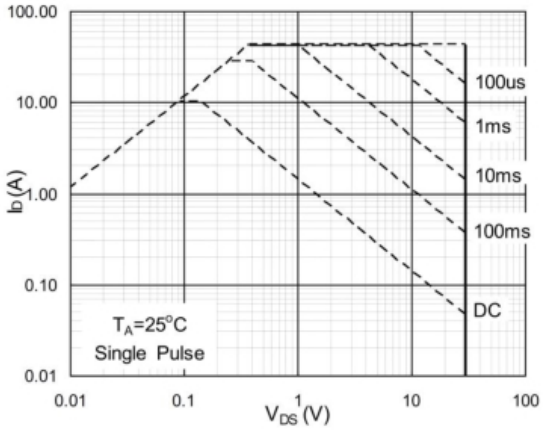
Normalized $V_{GS(th)}$vs.T_J



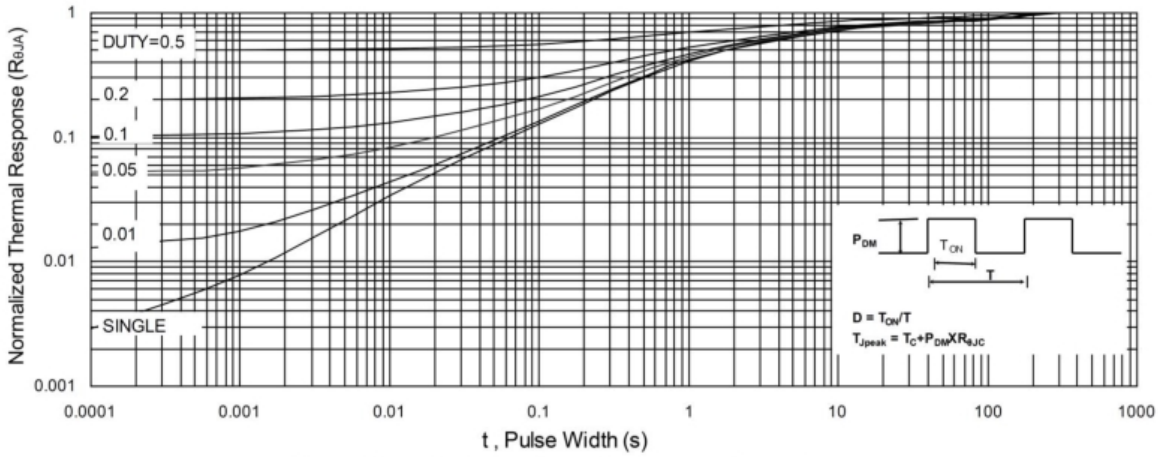
Normalized R_{DSON}vs.T_J



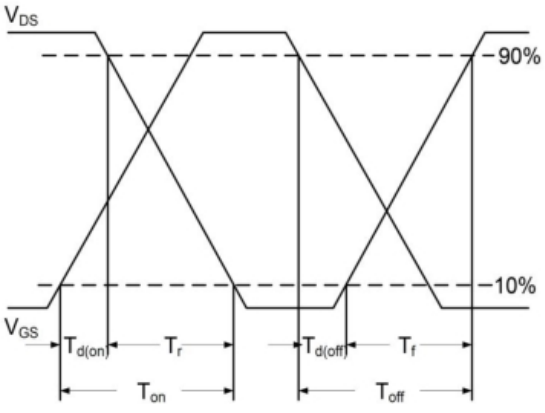
Capacitance



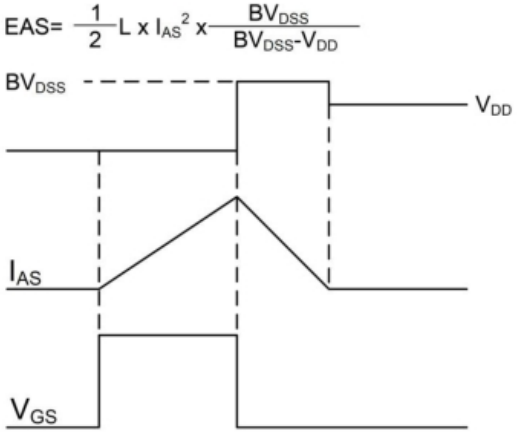
Safe Operating Area



Normalized Maximum Transient Thermal Impedance

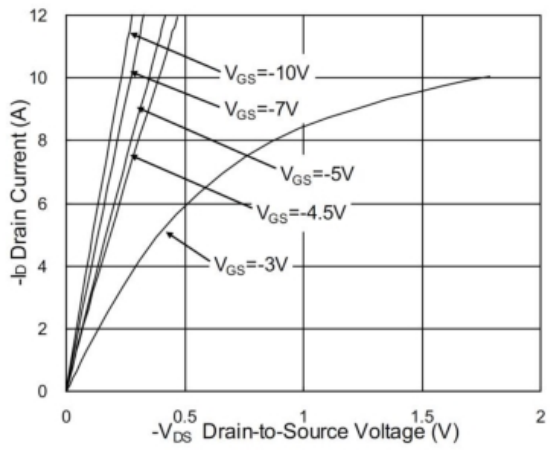


Switching Time Waveform

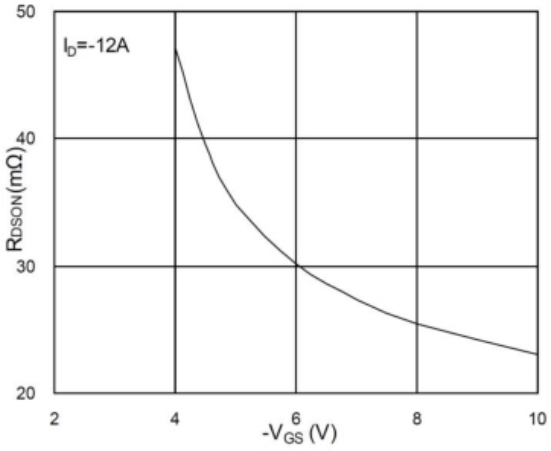


Unclamped Inductive Switching Waveform

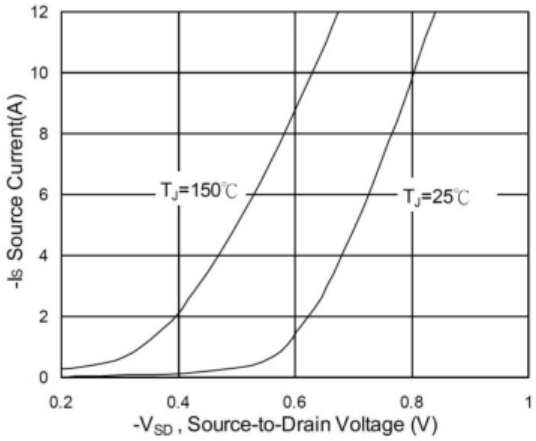
P-Channel Typical Characteristics



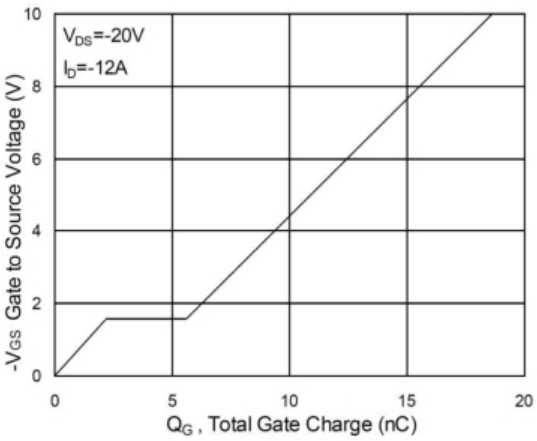
Output Characteristics



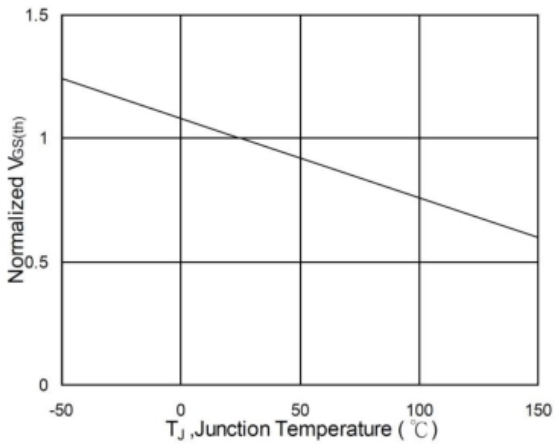
On-Resistance v.s Gate-Source



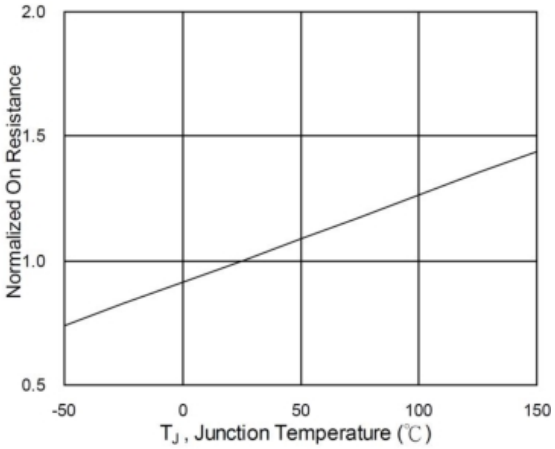
Forward Characteristics of Reverse



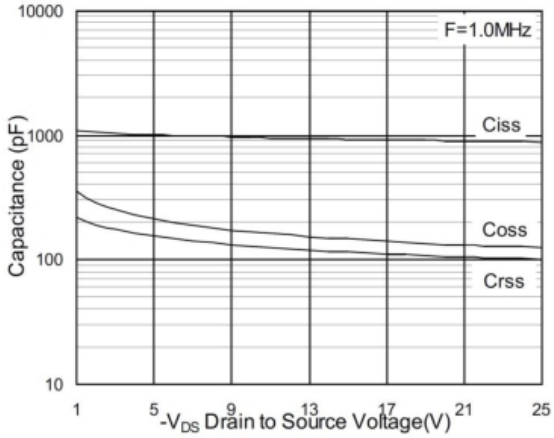
Gate-Charge Characteristics



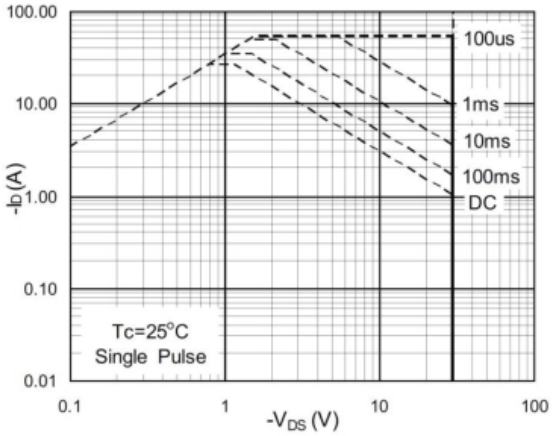
Normalized VGS(th) v.s TJ



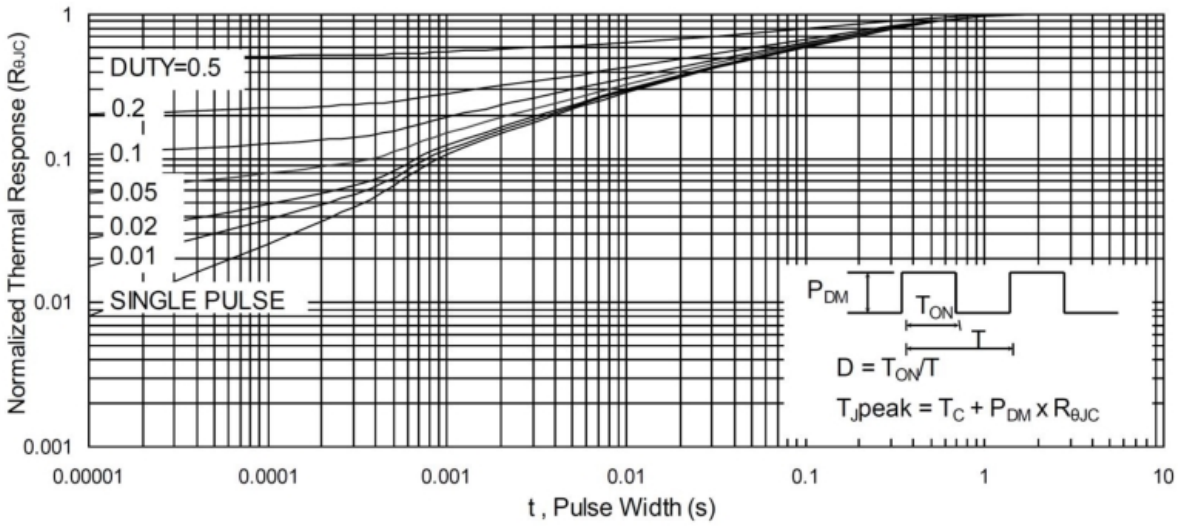
Normalized RDSON v.s TJ



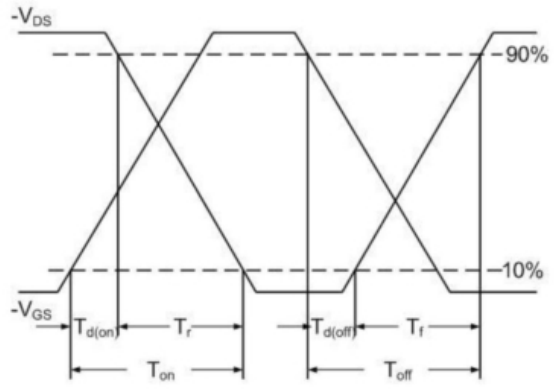
Capacitance vs Vds



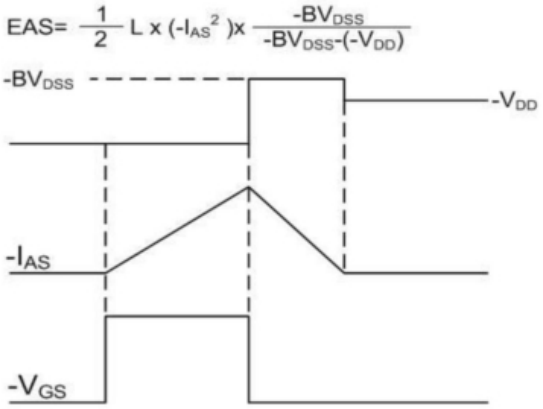
Safe Operating Area



Normalized Maximum Transient Thermal Impedance

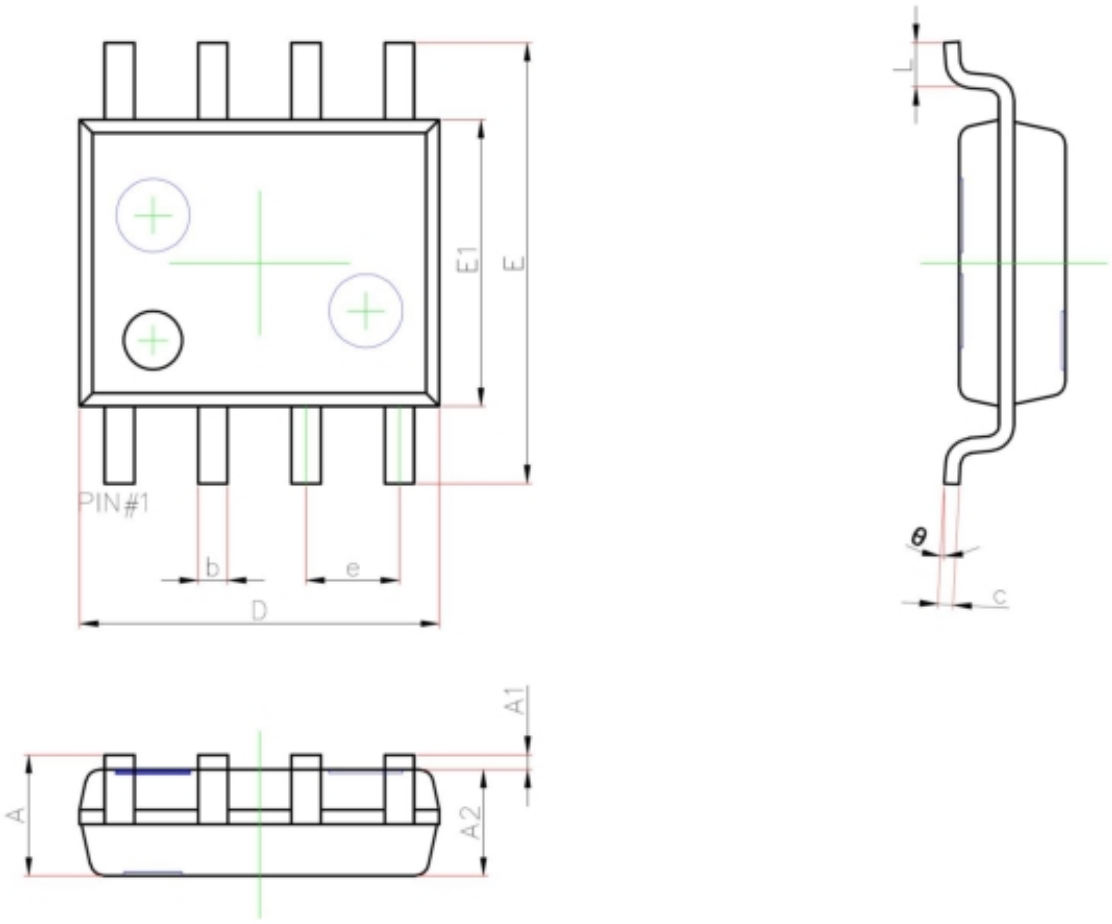


Switching Time Waveform



Unclamped Inductive Switching Waveform

SOP-8 Package Information



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	1.35	1.75
A1	0.10	0.25
A2	1.35	1.55
b	0.33	0.51
c	0.17	0.25
D	4.80	5.00
e	1.27 REF.	
E	5.80	6.20
E1	3.80	4.00
L	0.40	1.27
θ	0°	8°