Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	15mΩ@10V	7A
	20mΩ@4.5V	
-30V	22mΩ@-10V	-7A
	32mΩ@-4.5V	

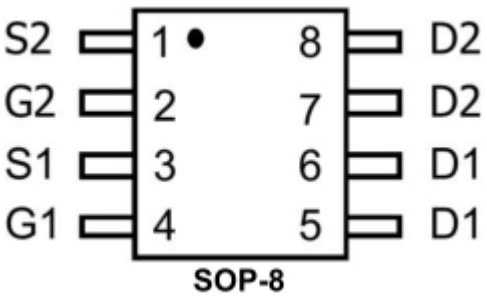
Feature

- TrenchFET Power MOSFET
- Excellent $R_{DS(on)}$ and Low Gate Charge

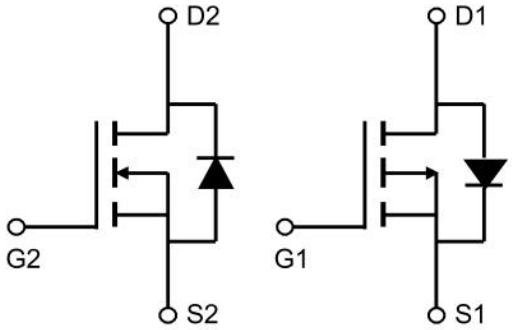
Application

- Load Switch for Portable Devices
- Battery Switch

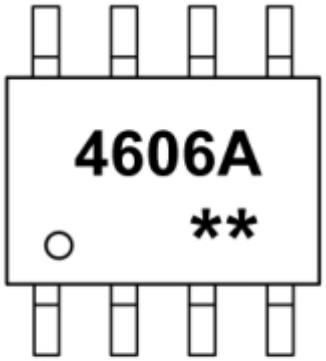
Package



Circuit diagram



Marking



4606A = 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	7	-7	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			±0.1	uA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.0	1.5	2.2	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =5A		15	22	mΩ
		V_{GS} =4.5V, I_D =3A		20	30	
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V, f=1MHz		572		pF
Output capacitance	C_{oss}			81		
Reverse transfer capacitance	C_{rss}			65		
Switching Characteristics						
Total gate charge	Q_g	V_{DS} =20V, V_{GS} =4.5V, I_D =12A		7.2		nC
Gate-source charge	Q_{gs}			1.4		
Gate-drain charge	Q_{gd}			2.2		
Turn-on Delay Time	$T_{d(on)}$	V_{DD}=12V, V_{GS} =10V, R_G=3.3Ω, I_D=5A		4.1		nS
Turn-on Rise Time	T_r			9.8		
Turn-Off Delay Time	$T_{d(off)}$			15.5		
Turn-Off Fall Time	t_f			6.0		
Source-Drain Diode Characteristics						
Diode Forward Voltage	V_{SD}	I_S=1A, V_{GS}=0V, T_J=25℃			1.2	V

Notes:

1. Pulse test: pulse width≤300μs, duty cycle≤2%.

2. Guaranteed by design, not subject to production testing.

P-Channel Electrical characteristics

(T_A=25℃, unless otherwise noted)

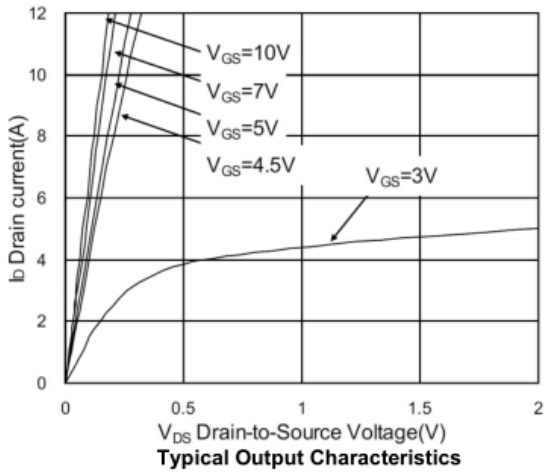
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Off characteristics						
Drain-source breakdown voltage	$BV_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-30V, V_{GS} = 0V			1	uA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±0.1	uA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1.0	-1.5	-2.2	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =-10V, I_D =-5A		22	30	mΩ
		V_{GS} =-4.5V, I_D =-3A		32	50	
Switching Characteristics						
Input Capacitance	C_{iss}	V_{DS} =-15V,V_{GS} =0V, f =1MHz		930		pF
Output Capacitance	C_{oss}			148		
Reverse Transfer Capacitance	C_{rss}			115		
Switching 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_{GEN} =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		
Source-Drain Diode Characteristics						
Body Diode Voltage (1)	V_{SD}	I_S=-1A, V_{GS} = 0			-1.2	V

Notes:

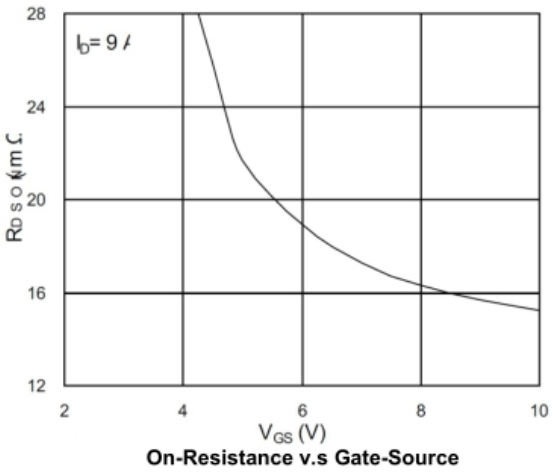
1. Pulse test: pulse width≤300μs, duty cycle≤2%.

2. Guaranteed by design, not subject to production testing.

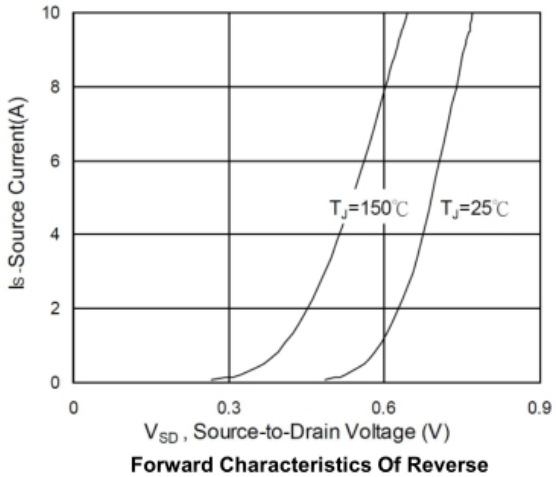
N-Channel Typical Characteristics



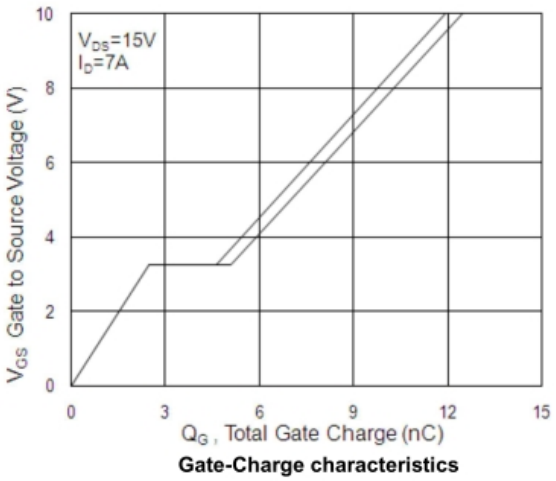
Typical Output Characteristics



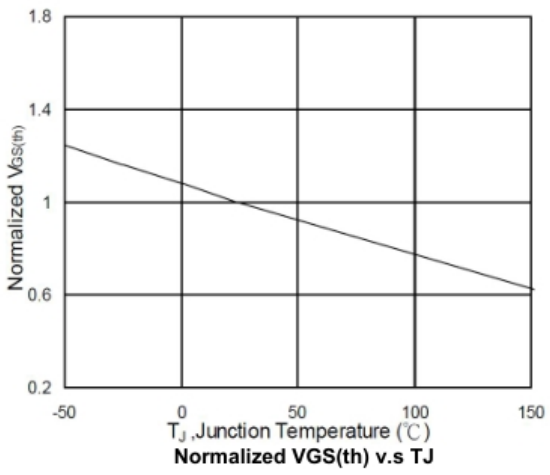
On-Resistance v.s Gate-Source



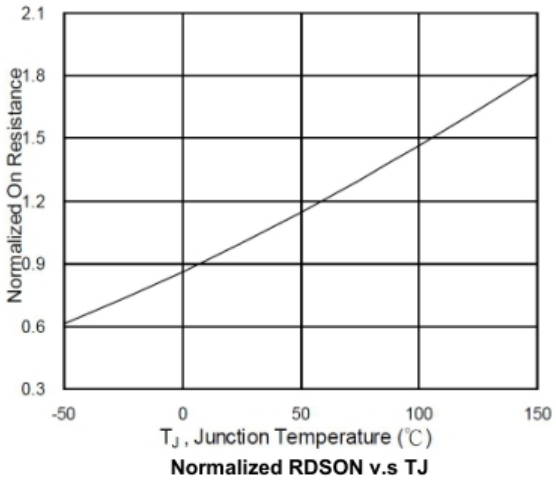
Forward Characteristics Of Reverse



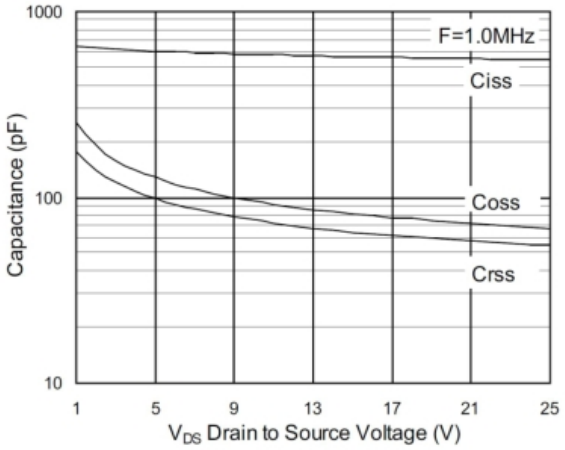
Gate-Charge characteristics



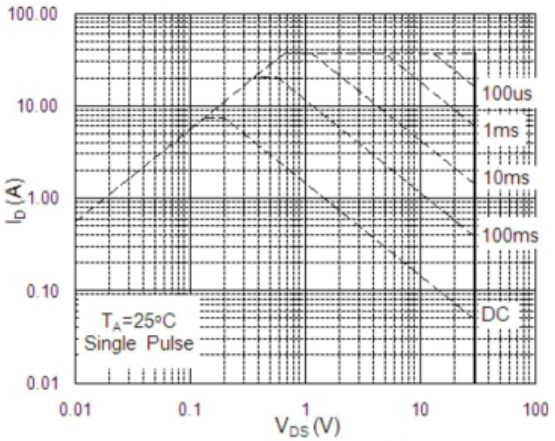
Normalized VGS(th) v.s TJ



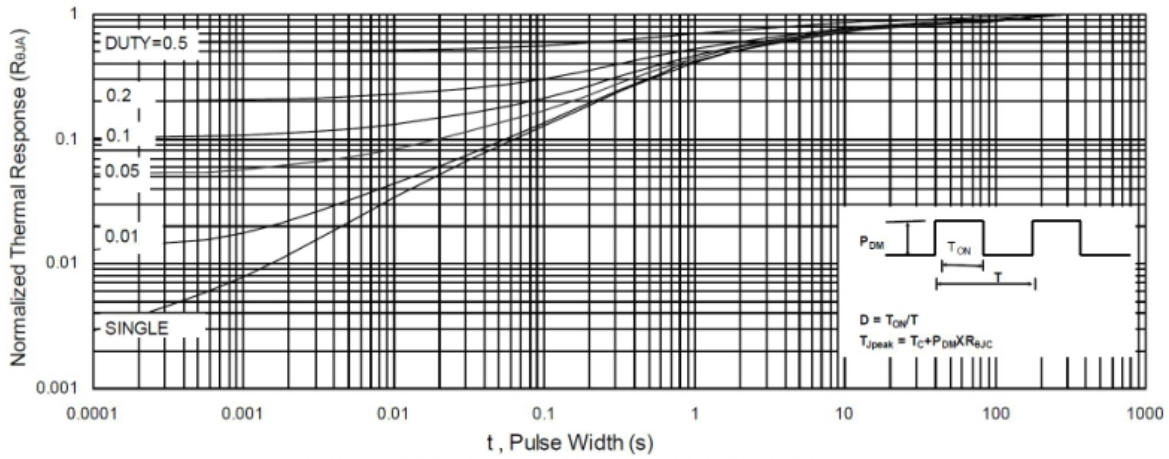
Normalized RDSON v.s TJ



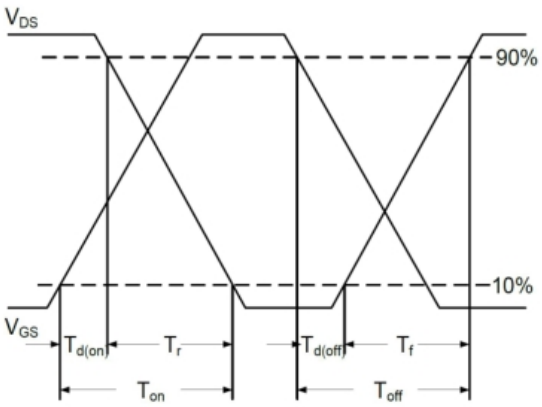
Capacitance



Safe Operating Area

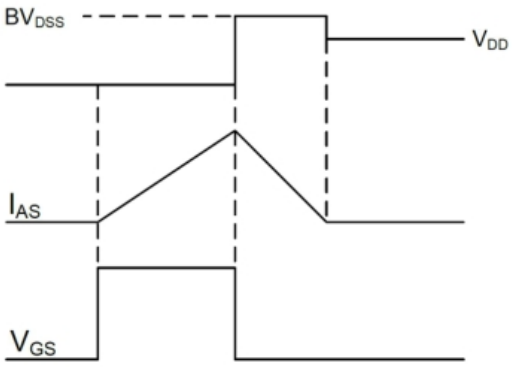


Normalized Maximum Transient Thermal Impedance



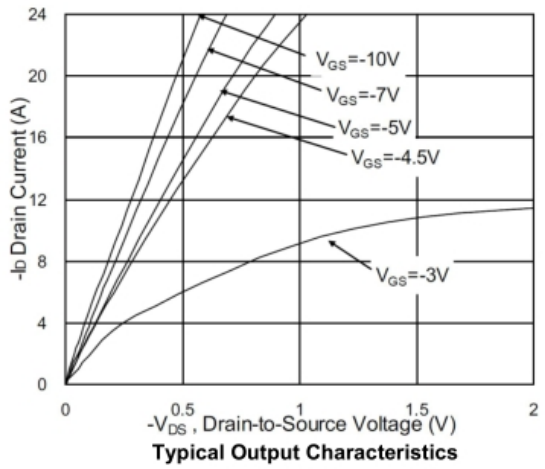
Switching Time Waveform

$$EAS = \frac{1}{2} L \times I_{AS}^2 \times \frac{BV_{DSS}}{BV_{DSS}-V_{DD}}$$

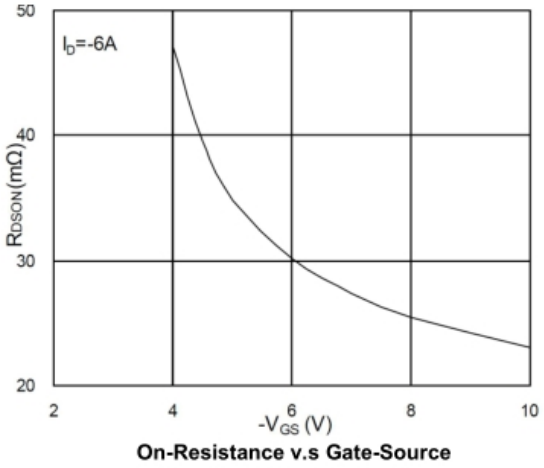


Unclamped Inductive Waveform

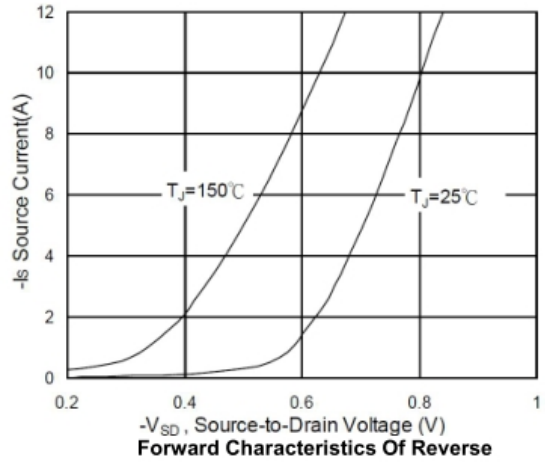
P-Channel Typical Characteristics



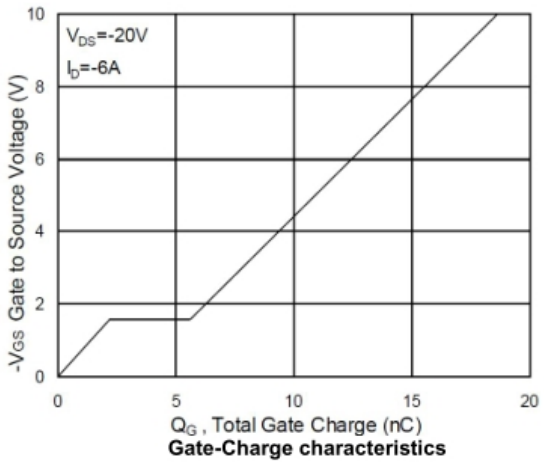
Typical Output Characteristics



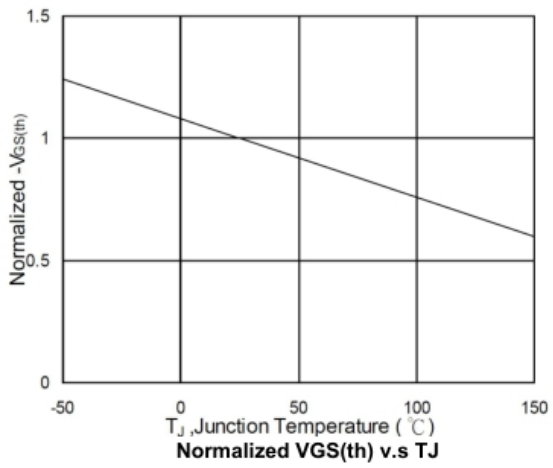
On-Resistance v.s Gate-Source



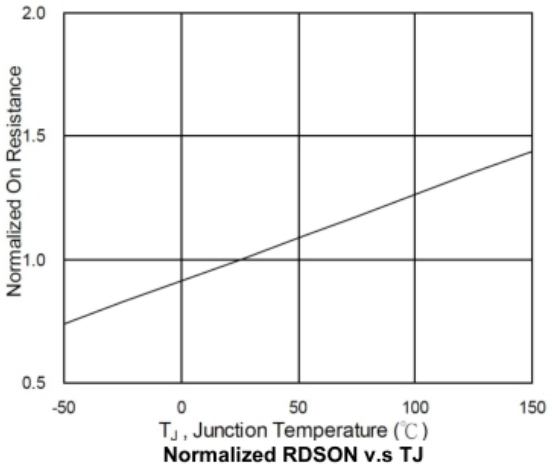
Forward Characteristics Of Reverse



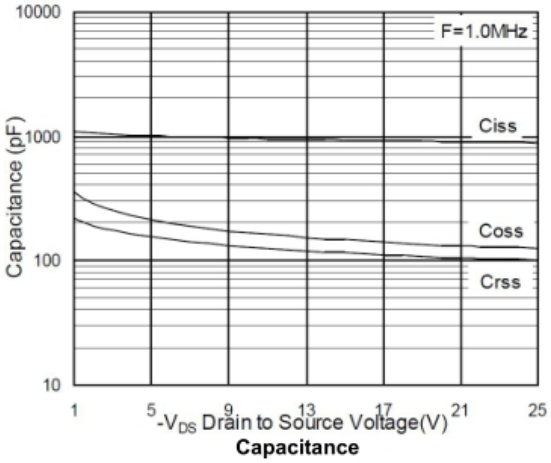
Gate-Charge characteristics



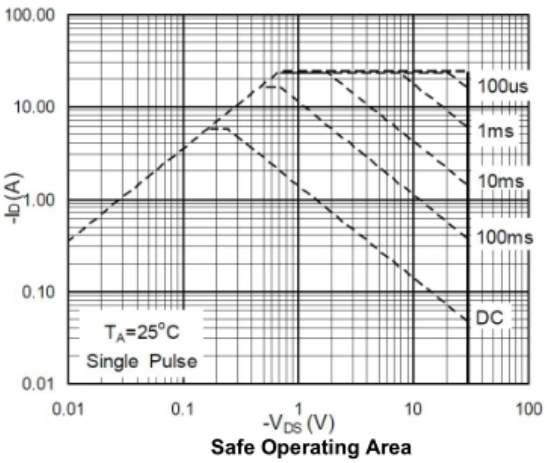
Normalized VGS(th) v.s TJ



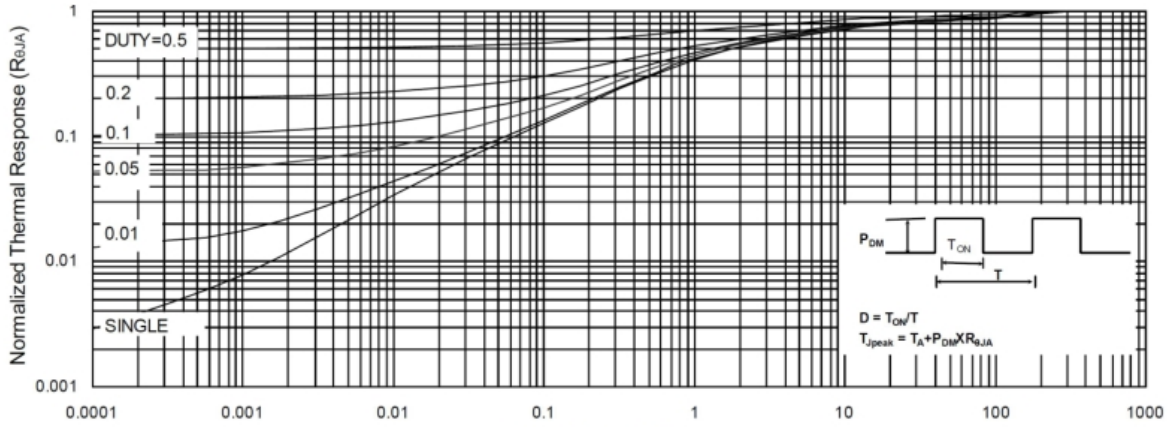
Normalized RDSON v.s TJ



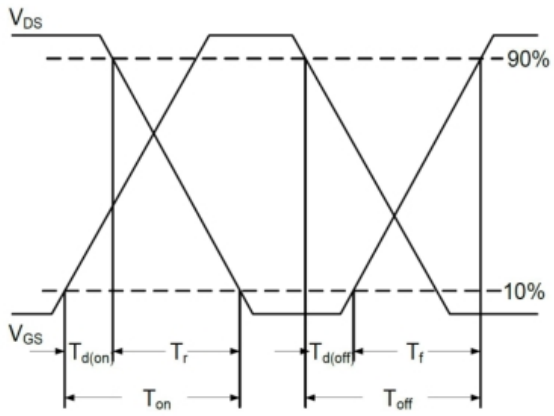
Capacitance



Safe Operating Area



Normalized Maximum Transient Thermal Impedance



Switching Time Waveform

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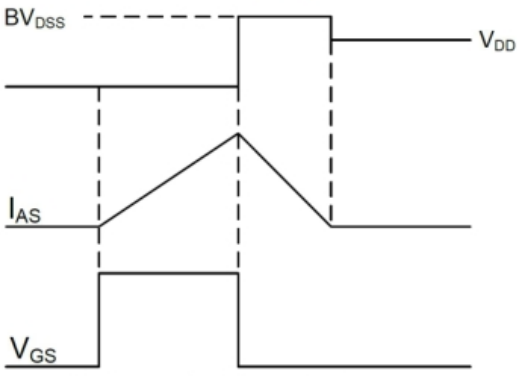
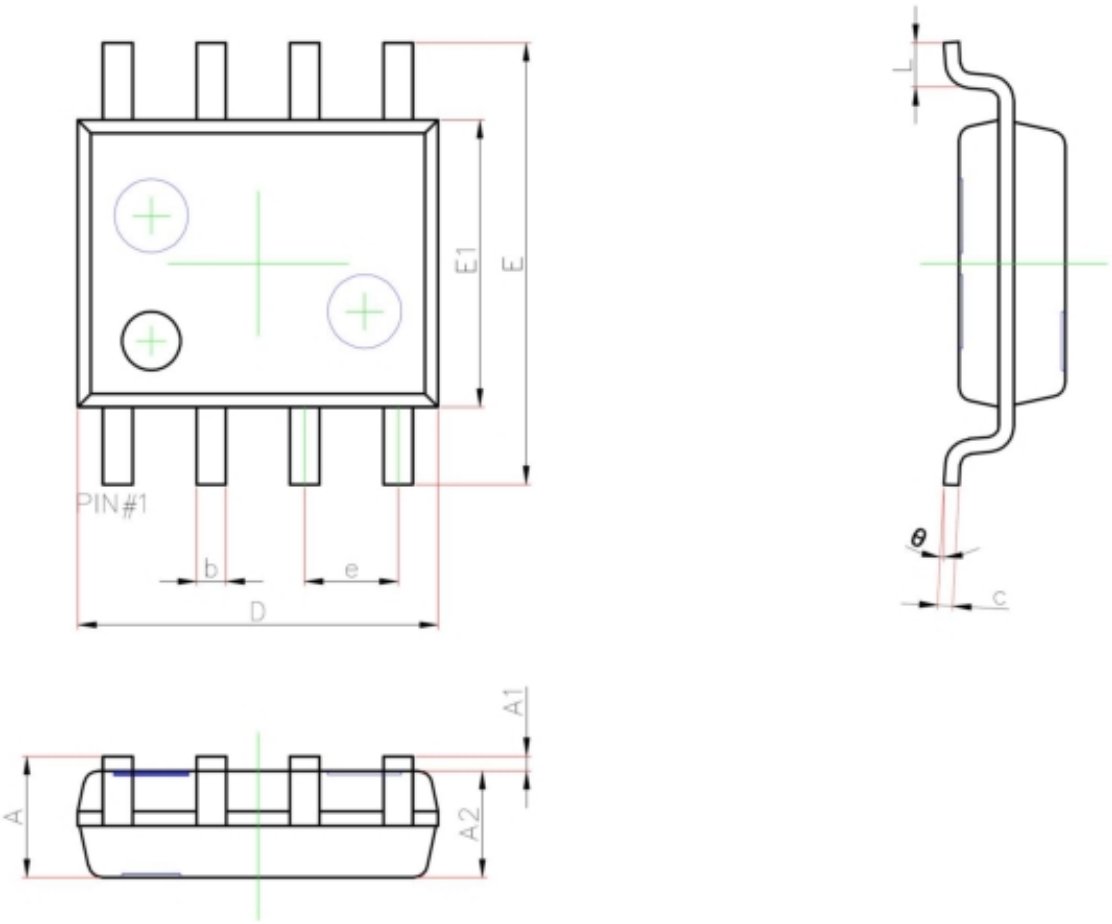


Unclamped Inductive Waveform

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°