Descriptions

This ±30V N-Channel and P-Channel compleme-ntary Enhancement MOSFET in a SOP-8 Plastic Package.

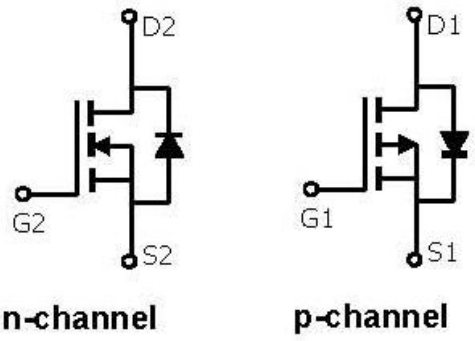
Features

N-channel	P-channel
V_{DS}(V)=30V	V_{DS}(V)=-30V
I_D=6.9A	I_D=6.0A
$R_{DS(ON)}$(Typ)=21.6mΩ(V_{GS}=10V)	$R_{DS(ON)}$(Typ)=50.3mΩ(V_{GS}=10V)
$R_{DS(ON)}$(Typ)=31.8mΩ(V_{GS}=4.5V)	$R_{DS(ON)}$Typ)=79.4mΩ(V_{GS}=4.5V)
Halogen-free Product.	Halogen-free Product.

Applications

These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies. And suitable for use as a load switch or in PWM applications.

Equivalent Circuit



n-channel **p-channel**

Pinning

Absolute Maximum Ratings(Ta=25℃)

Parameter	Symbol	Rating		Unit
		N-channel	P-channel	
Drain-Source Voltage	V_{DSS}	±30		V
Gate-Source Voltage	V_{GSS}	±20		V
Continuous Drain Current [A]	I_D (T_A=25℃)	6.9	-6.0	A
	I_D (T_A=70℃)	5.8	-5.0	A
Pulsed Drain Current [B]	I_{DM}	±30		A
Power Dissipation	P_D (T_A=25℃)	2		W
	P_D (T_A=70℃)	1.44		W
Maximum Junction-to-Ambient [A]	$R_{\theta JA}$(t≤10s)	62.5		℃/W
	$R_{\theta JA}$ (Steady-State)	90		℃/W
Maximum Junction-to-Lead [C]	$R_{\theta JL}$ (Steady-State)	40		℃/W
Junction and Storage Temperature Range	T_J,T_{STG}	-55 to +150		℃

Notes:

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The value in any a given application depends on the user's specific board design. The current rating is based on the t ≤ 10s thermal resistance rating.

B: Repetitive rating, pulse width limited by junction temperature.

C. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to lead $R_{\theta JL}$ and lead to ambient.

D. The static characteristics in Figures 1 to 6,12,14 are obtained using 80 μs pulses, duty cycle 0.5% max.

E. These tests are performed with the device mounted on 1 in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The SOA curve provides a single pulse rating.

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	30	33.7		V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V V_{GS}=0V			1.0	μA
		V_{DS}=24V V_{GS}=0V T_J=55℃			5.0	μA
Gate-Body leakage current	I_{GSS}	V_{GS}=±20V V_{DS}=0V			100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=250μA	1.1	1.7	2.4	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V I_D=6.9A		21.6	32	mΩ
		V_{GS}=4.5V I_D=5.0A		31.8	40	mΩ
Diode Forward Voltage	V_{SD}	V_{GS}=0V I_S=1.0A		0.78	1.0	V
Input Capacitance	C_{iss}	V_{DS}=25V V_{GS}=0V f=1.0MHz		325		pF
Output Capacitance	C_{oss}			140		pF
Reverse Transfer Capacitance	C_{rss}			30		pF
Gate resistance	R_g	V_{DS}=0V V_{GS}=0V f=1.0MHz		4.6		Ω
Total Gate Charge(10V)	Q_g	V_{GS}=10V V_{DS}=15V I_D=6A		5.2		nC
Total Gate Charge(4.5V)				2.5		nC
Gate-Source Charge	Q_{gs}			0.8		nC
Gate-Drain Charge	Q_{gd}			1.3		nC
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=15 V V_{GS}=10V R_L=2.5Ω R_{GEN}=3Ω		4.5		ns
Turn-On Rise Time	t_r			2.5		ns
Turn-Off Delay Time	$t_{d(off)}$			14.5		ns
Turn-Off Fall Time	t_f			3.5		ns

Electrical Characteristic Curve

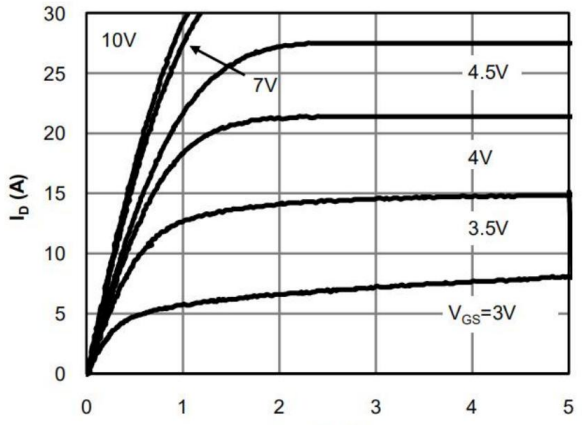


Fig 1: On-Region Characteristics

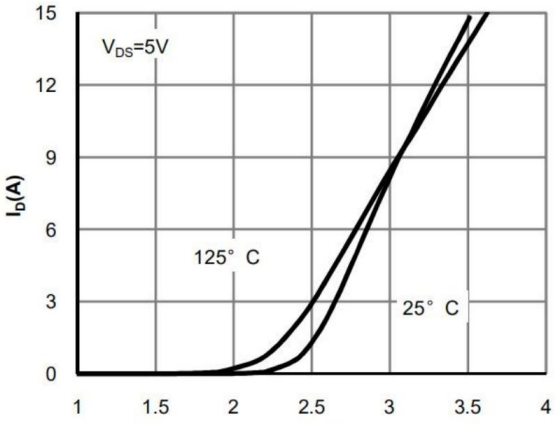


Figure 2: Transfer Characteristics

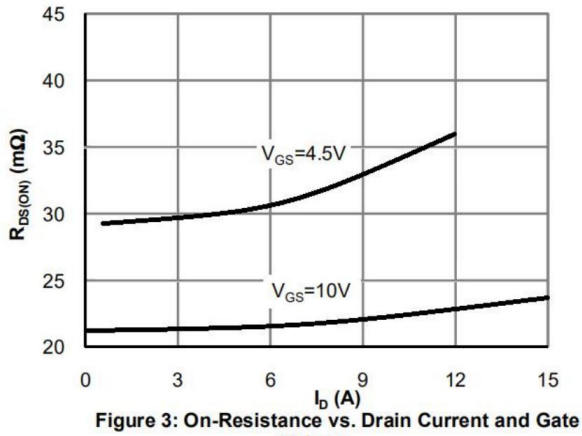


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

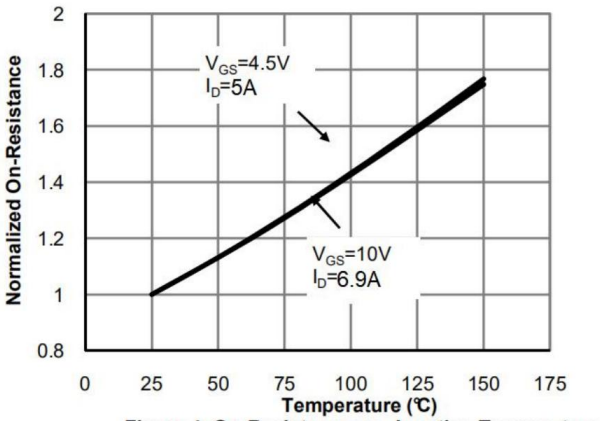


Figure 4: On-Resistance vs. Junction Temperature

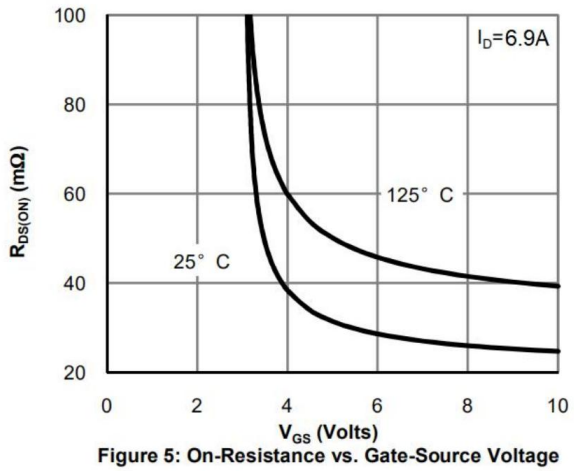


Figure 5: On-Resistance vs. Gate-Source Voltage

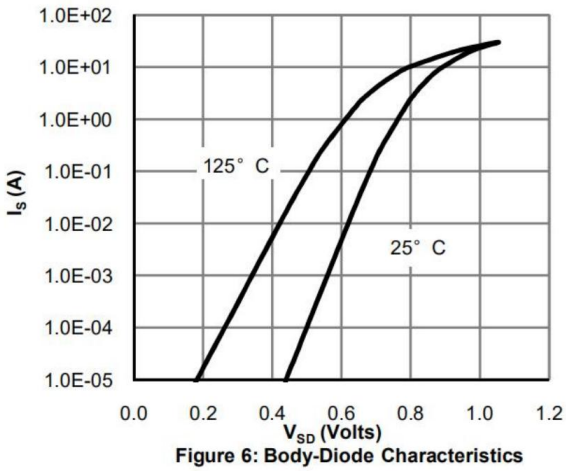


Figure 6: Body-Diode Characteristics

Electrical Characteristic Curve

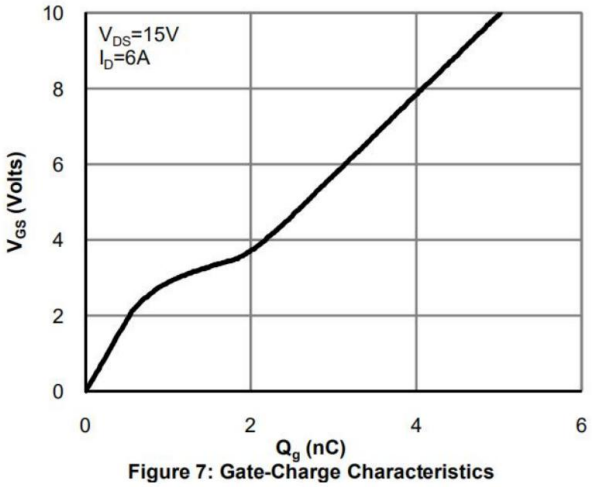


Figure 7: Gate-Charge Characteristics

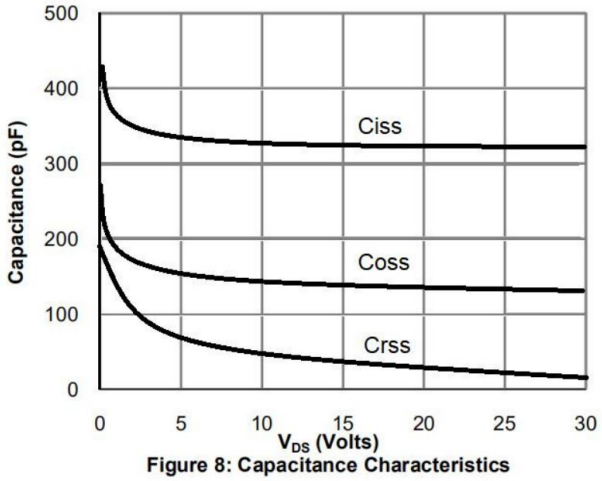


Figure 8: Capacitance Characteristics

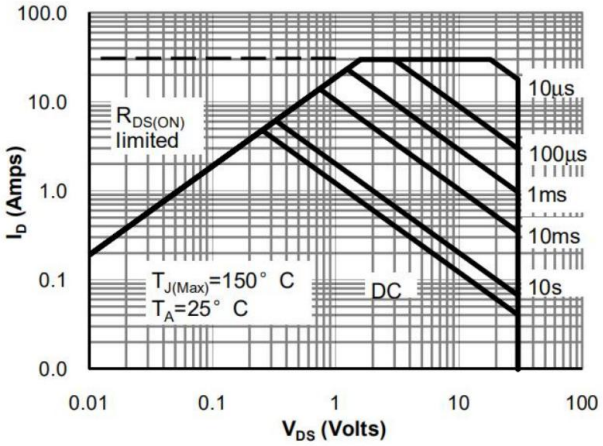


Figure 9: Maximum Forward Biased Safe Operating Area

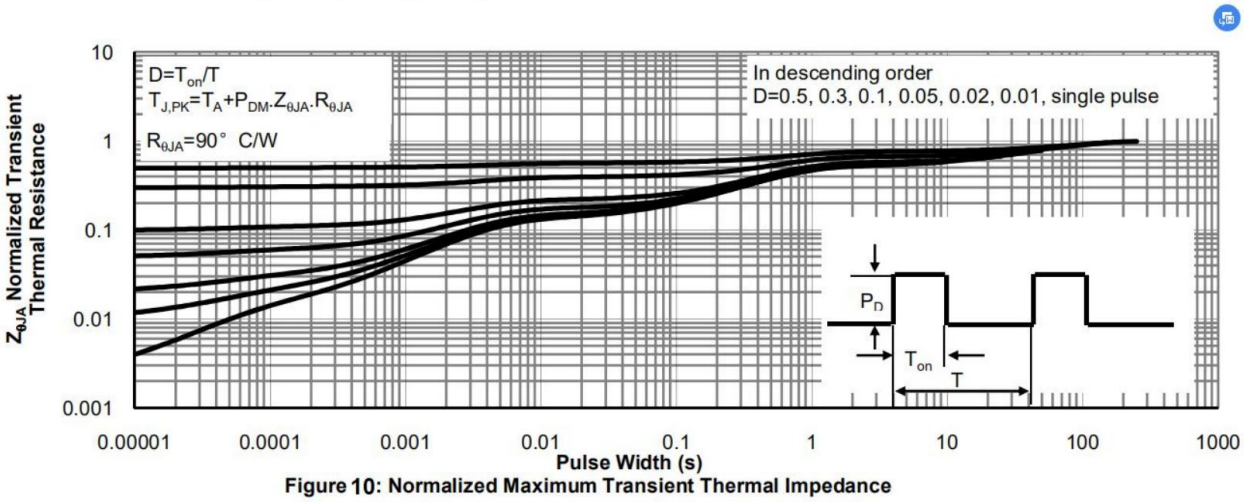
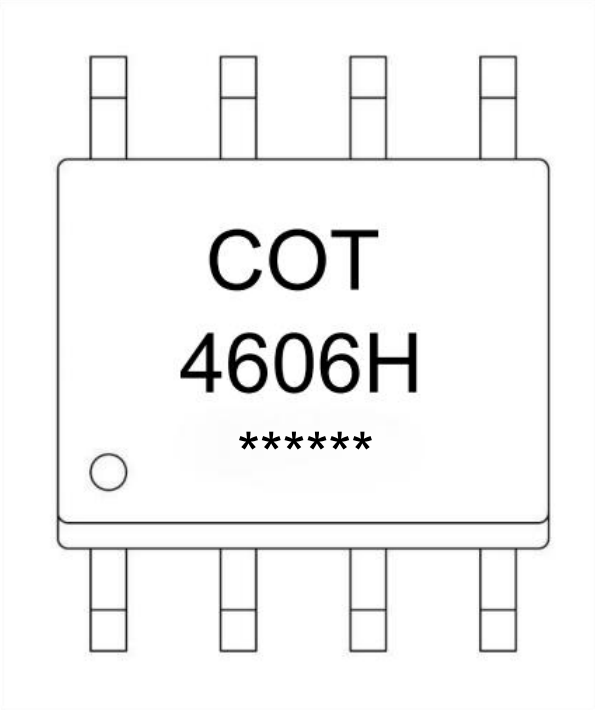


Figure 10: Normalized Maximum Transient Thermal Impedance

Marking Instructions



Note:

COT:	Company Logo
4606H:	Product Type.
******:	Lot No. Code, code change with Lot No.

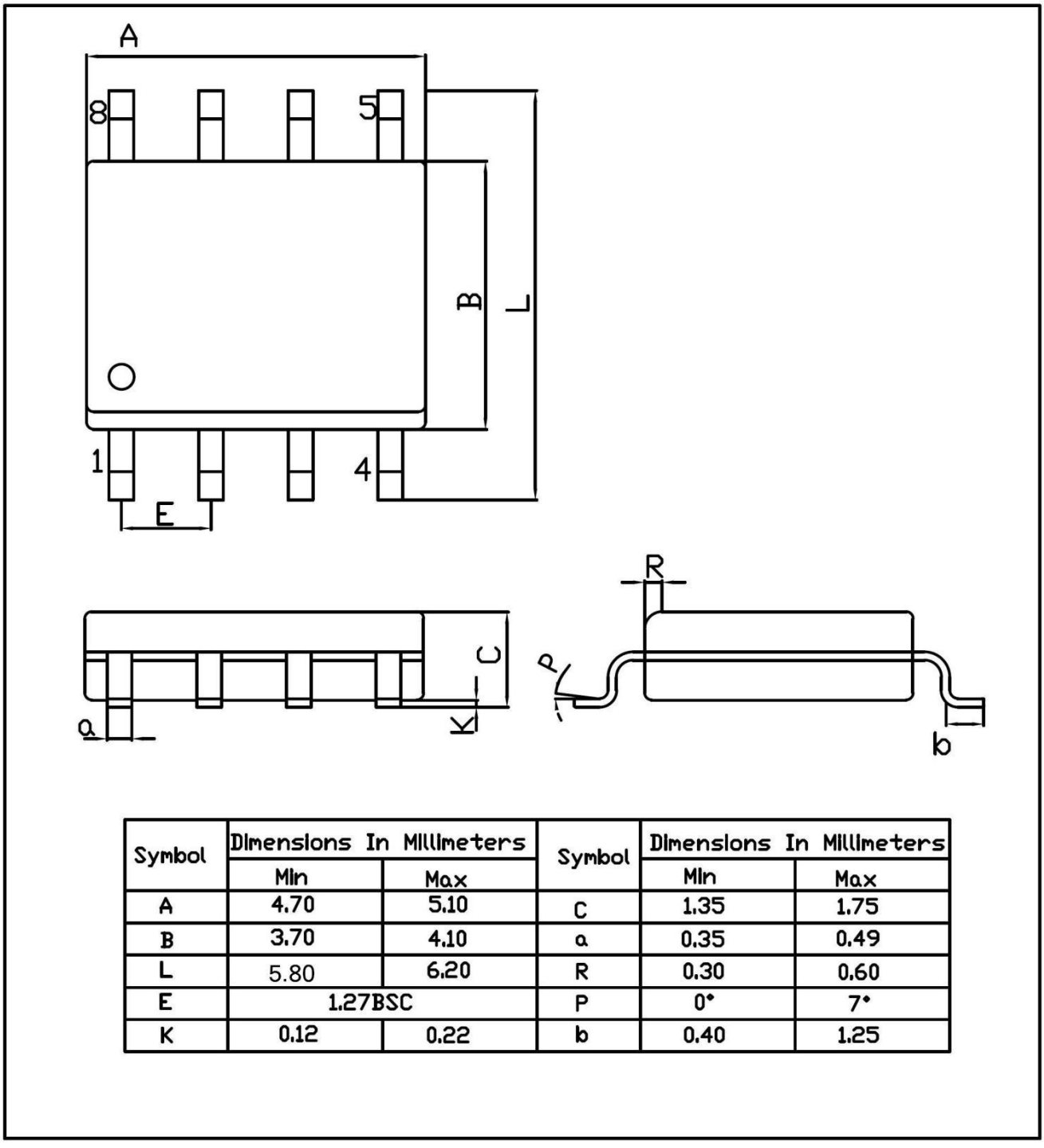
Packaging SPEC

REEL INFORMATION

Package Type	Units					Dimension (unit：mm³)		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
SOP-8	4,000	2	8,000	6	48,000	13″ ×12	360×360×50	380×335×366

Package Outline Dimensions

SOP-8 Unit:mm



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	4.70	5.10	C	1.35	1.75
B	3.70	4.10	a	0.35	0.49
L	5.80	6.20	R	0.30	0.60
E	1.27BSC		P	0°	7°
K	0.12	0.22	b	0.40	1.25