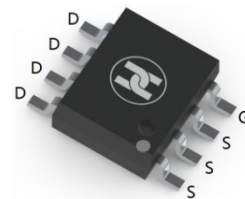


LOW VOLTAGE MOSFET (N-CHANNEL)

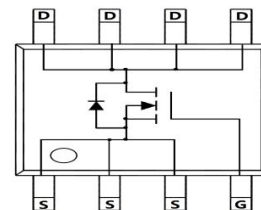
FEATURES

- Ultra low on-resistance: $V_{DS}=30V, I_D=5A, R_{DS(ON)} \leq 28m\Omega @ V_{GS}=10V$
- For boost converters and synchronous rectifiers applications
- For high frequency switching applications
- Surface Mount device



MECHANICAL DATA

- Case: SOP-8
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Weight: 0.3 grams (approximate)
- Marking: 4406



SOP-8

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_{D@TC=25^\circ\text{C}}$	5.8	A
	$I_{D@TC=100^\circ\text{C}}$	4.5	A
Pulsed Drain Current ^①	I_{DM}	30	A
Total Power Dissipation	$P_D@T_A=25^\circ\text{C}$	4.5	W
Operating Junction Temperature	T_J	-55 to 150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 to 150	$^\circ\text{C}$
Single Pulse Avalanche Energy	E_{AS}	30	mJ

LOW VOLTAGE MOSFET (N-CHANNEL)
ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)
•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R _{thJC}	-	-	5.5	° C/W
Thermal resistance, junction - ambient	R _{thJA}	-	-	65	° C/W
Soldering temperature, wavesoldering for 8 s	T _{sold}	-	-	265	° C

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250uA	30	-	-	V
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _D = 250uA	1.0	1.5	2.5	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} = 30 V, V _{GS} = 0V	-	-	1.0	uA
Gate- Source Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V	-	-	±100	nA
Static Drain-source On Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 5 A	-	19	28	mΩ
		V _{GS} = 4.5V, I _D = 3A	-	26	40	mΩ
Forward Transconductance	g _{FS}	V _{DS} = 25V, I _D = 10A	-	5	-	S
Source-drain voltage	V _{SD}	I _S = 10A	-	-	1.2	V

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C _{iss}	f = 1MHz V _{DS} = 15V V _{GS} = 0V	-	630	-	pF
Output capacitance	C _{oss}		-	88.5	-	
Reverse transfer capacitance	C _{rss}		-	73.5	-	

•Gate Charge characteristics(T_a = 25°C)

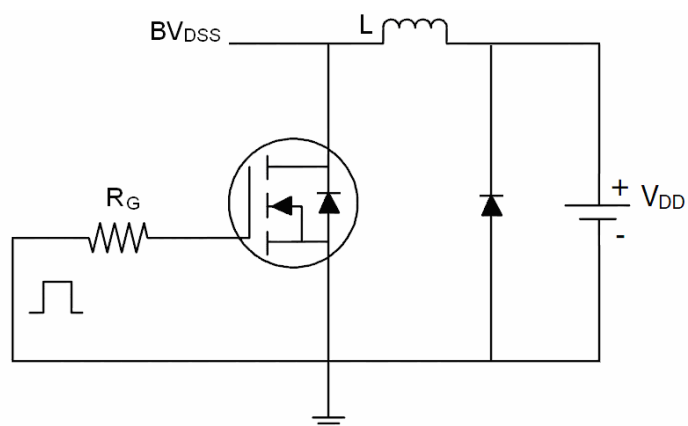
Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q _g	V _{DD} = 15V	-	15.3	-	nC
Gate - Source charge	Q _{gs}	I _D = 10A	-	3.28	-	
Gate - Drain charge	Q _{gd}	V _{GS} = 10V	-	2.14	-	

Note: ① Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2% ;

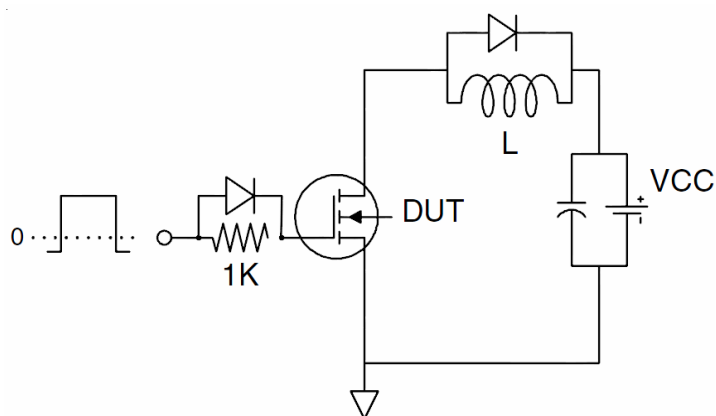
LOW VOLTAGE MOSFET (N-CHANNEL)

Test Circuit

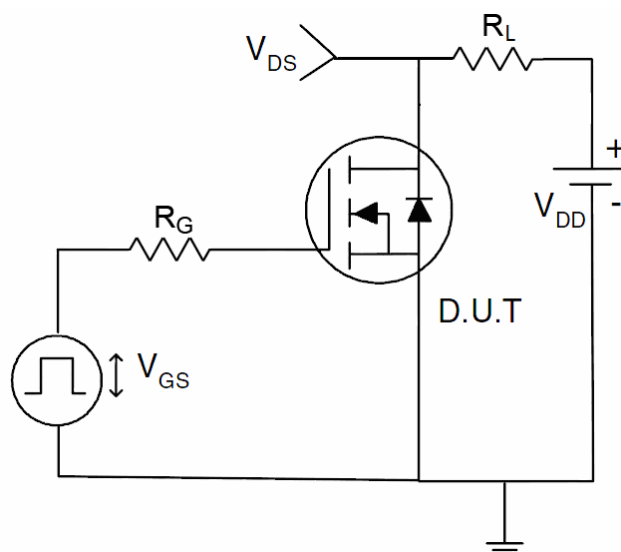
1) E_{AS} test Circuit



2) Gate charge test Circuit



3) Switch Time Test Circuit



LOW VOLTAGE MOSFET (N-CHANNEL)

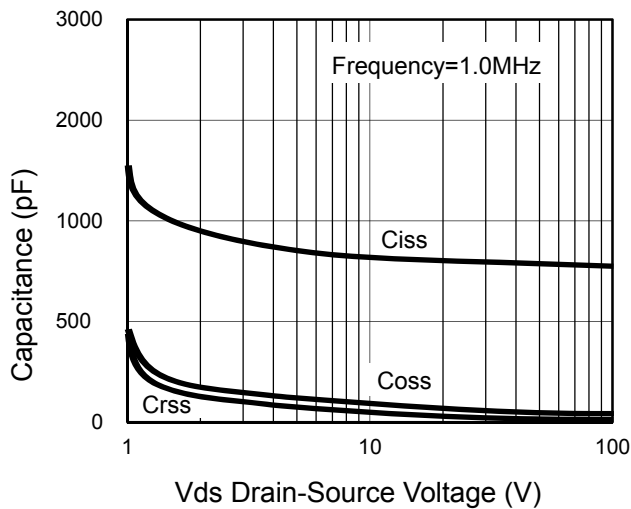


Figure 7 Capacitance vs Vds

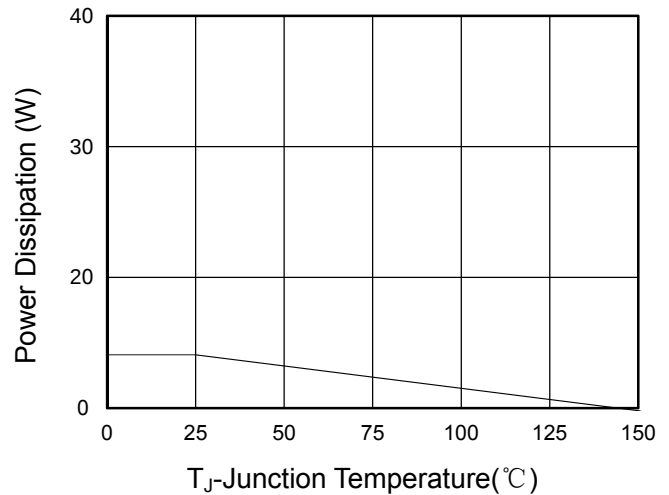


Figure 9 Power De-rating

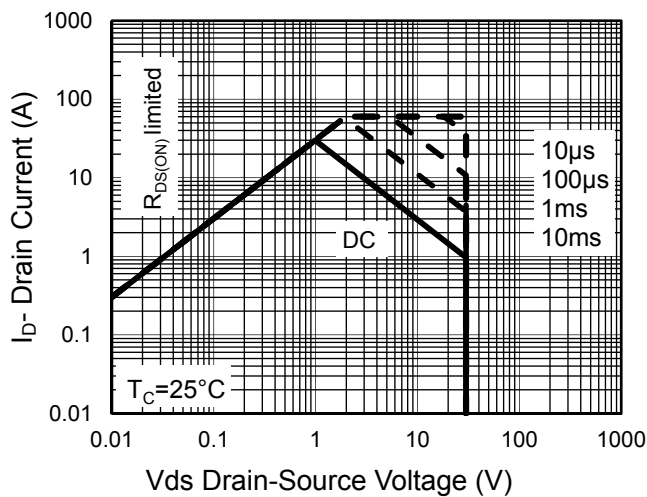


Figure 8 Safe Operation Area

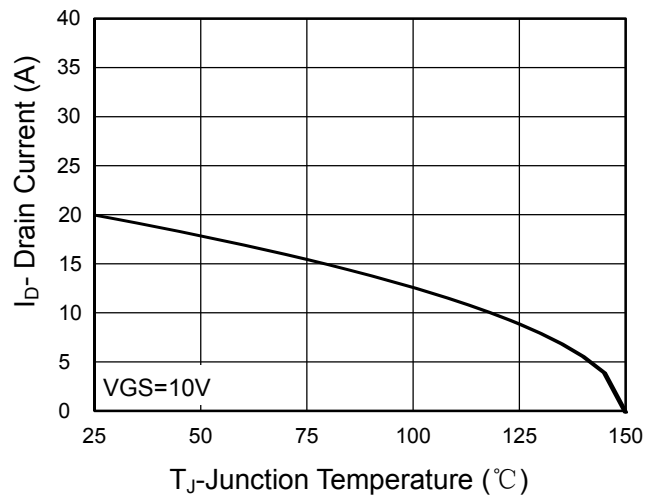


Figure 10 Current De-rating

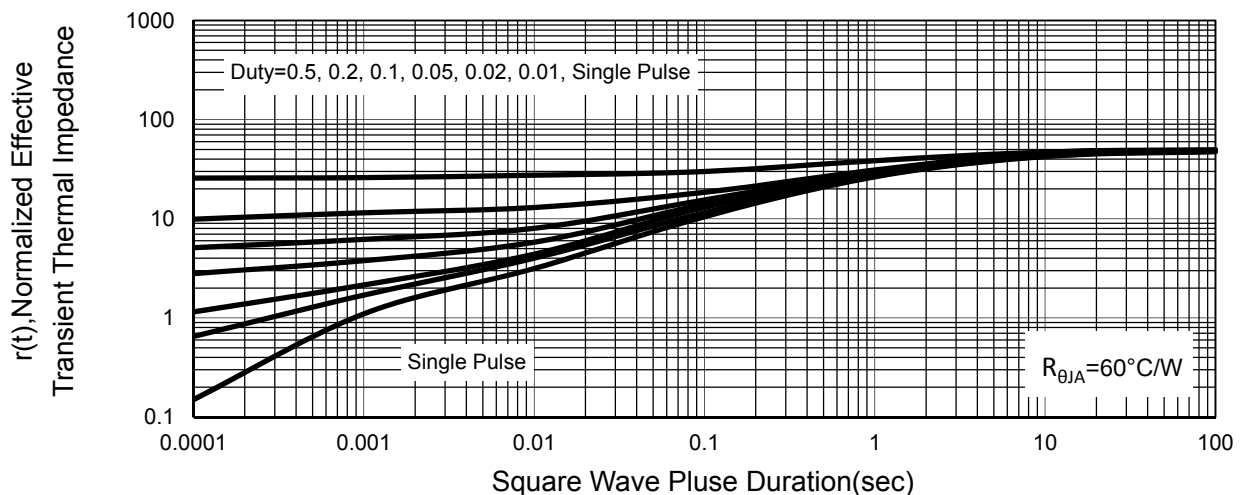
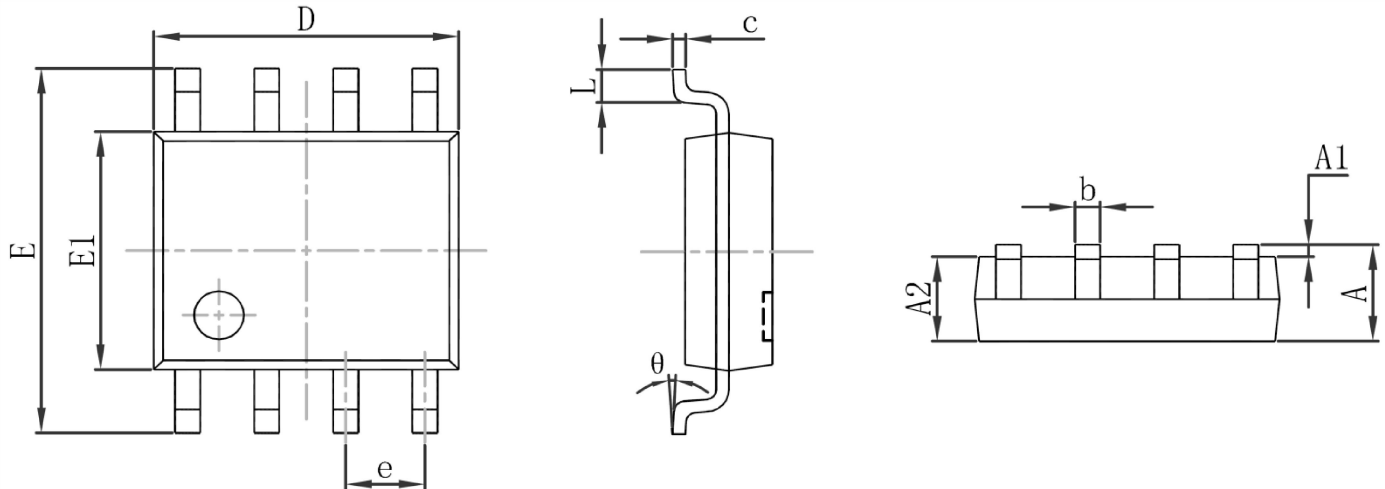


Figure 11 Normalized Maximum Transient Thermal Impedance

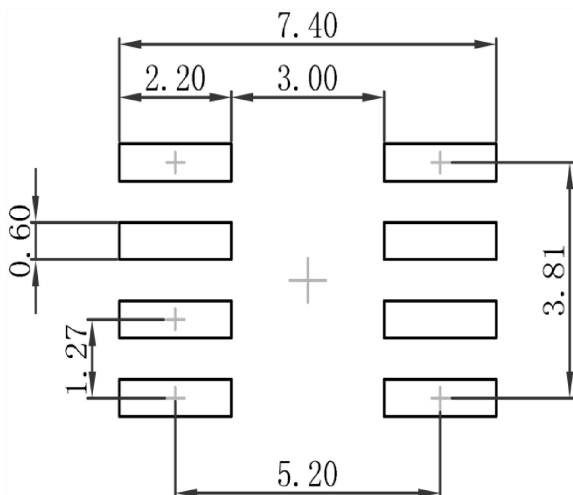
LOW VOLTAGE MOSFET (N-CHANNEL)

SOP-8 Package Outline Dimensions



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	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270(BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

SOP-8 Suggested Pad Layout



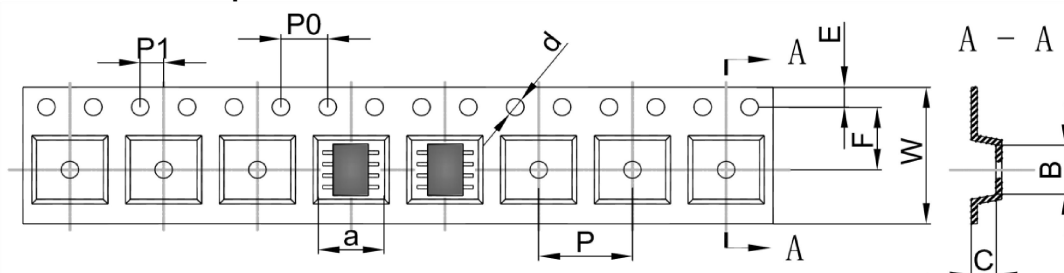
Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only

LOW VOLTAGE MOSFET (N-CHANNEL)

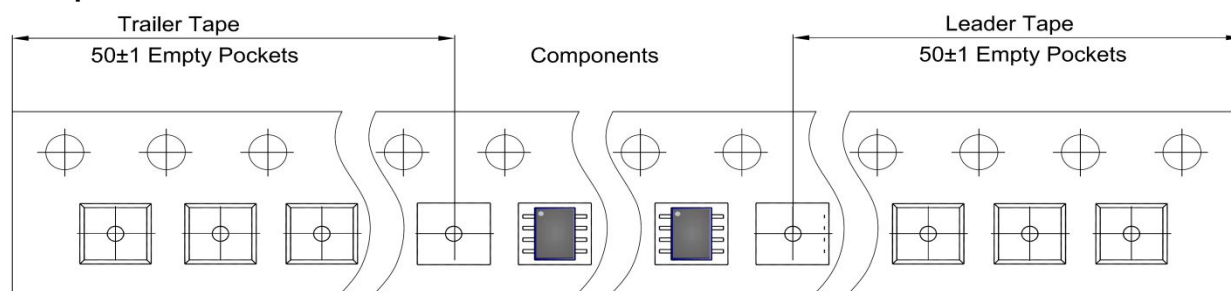
SOP-8 Tape and Reel

SOP-8 Embossed Carrier Tape

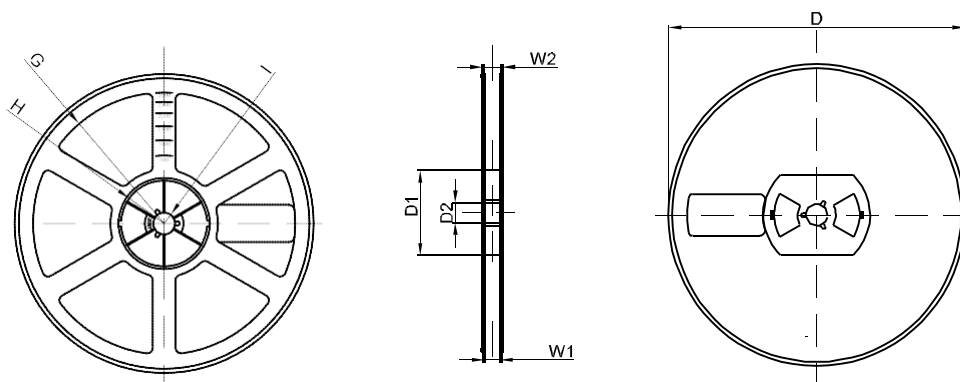


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOP-8	6.40	5.40	2.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

SOP-8 Tape Leader and Trailer



SOP-8 Reel



DIMENSIONS ARE IN MILLIMETER								
REEL OPTION	D	D1	D2	G	H	I	W1	W2
13" DIA	Ø330.00	100.00	13.00	R151.00	R56.00	R6.50	12.40	17.60
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1