

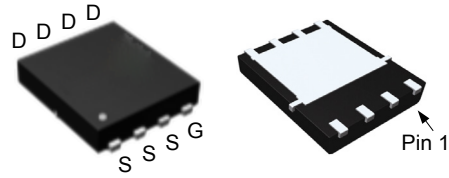
Features

- -20V/-50A
 - $R_{DS(ON)}=5.5m\Omega(\text{typ.})@V_{GS}=-4.5V$
 - $R_{DS(ON)}=7.6m\Omega(\text{typ.})@V_{GS}=-2.5V$
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

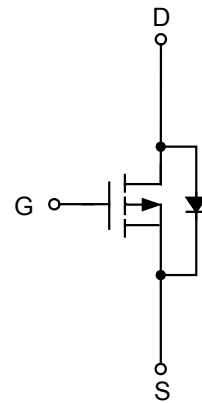
Applications

- Portable Equipment applications
- For E-cigarette battery protection application
- Load switch

Pin Description



DFN5x6A-8_EP



P-Channel MOSFET

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Rating	Unit
Common Ratings			
V_{DSS}	Drain-Source Voltage	-20	V
V_{GSS}	Gate-Source Voltage	± 12	
T_J	Maximum Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	
I_S	Diode Continuous Forward Current	$T_C=25^\circ\text{C}$ -50	A
I_D	Continuous Drain Current	$T_C=25^\circ\text{C}$ -50	A
		$T_C=100^\circ\text{C}$ -30	
I_{DM}^a	Pulsed Drain Current	$T_C=25^\circ\text{C}$ -150	
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$ 36.7	W
		$T_C=100^\circ\text{C}$ 14.7	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	Steady state	$^\circ\text{C}/\text{W}$
$R_{\theta JA}^b$	Thermal Resistance-Junction to Ambient	Steady state	$^\circ\text{C}/\text{W}$
I_{AS}^c	Avalanche Current, Single pulse	$L=0.5\text{mH}$ -30	A
E_{AS}^c	Avalanche Energy, Single pulse	$L=0.5\text{mH}$ 225	mJ

Note a : Pulse width limited by max. junction temperature.

Note b : Surface Mounted on 1in^2 pad area.

Note c : UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature $T_J=25^\circ\text{C}$).

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

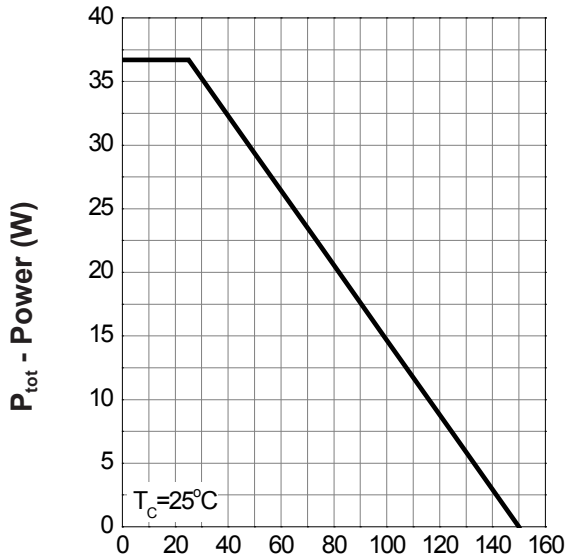
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=-250\mu A$	-20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-16V, V_{GS}=0V$	-	-	-1	μA
		$T_J=85^\circ C$	-	-	-30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	-0.4	-0.7	-1	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	± 100	nA
$R_{DS(ON)}^d$	Drain-Source On-state Resistance	$V_{GS}=-4.5V, I_{DS}=-15A$	-	5.5	6.8	$m\Omega$
		$V_{GS}=-2.5V, I_{DS}=-10A$	-	7.6	9.5	
Diode Characteristics						
V_{SD}^d	Diode Forward Voltage	$I_{SD}=-15A, V_{GS}=0V$	-	-0.75	-1	V
t_{rr}	Reverse Recovery Time	$I_{SD}=-15A, dI_{SD}/dt=100A/\mu s$	-	37	-	ns
Q_{rr}	Reverse Recovery Charge		-	20	-	nC
Dynamic Characteristics ^e						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$	-	2	-	Ω
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=-10V,$ Frequency=1.0MHz	-	3800	4600	pF
C_{oss}	Output Capacitance		-	460	-	
C_{riss}	Reverse Transfer Capacitance		-	457	-	
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=-10V, R_L=10\Omega,$ $I_{DS}=-1A, V_{GEN}=-10V,$ $R_G=6\Omega$	-	14	25	ns
t_r	Turn-on Rise Time		-	17	31	
$t_{d(OFF)}$	Turn-off Delay Time		-	186	335	
t_f	Turn-off Fall Time		-	84	151	
Gate Charge Characteristics ^e						
Q_g	Total Gate Charge	$V_{DS}=-10V, V_{GS}=-4.5V,$ $I_{DS}=-15A$	-	48	63	nC
Q_{gs}	Gate-Source Charge		-	5.5	-	
Q_{gd}	Gate-Drain Charge		-	18	-	

 Note d : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Note e : Guaranteed by design, not subject to production testing.nd on package type.

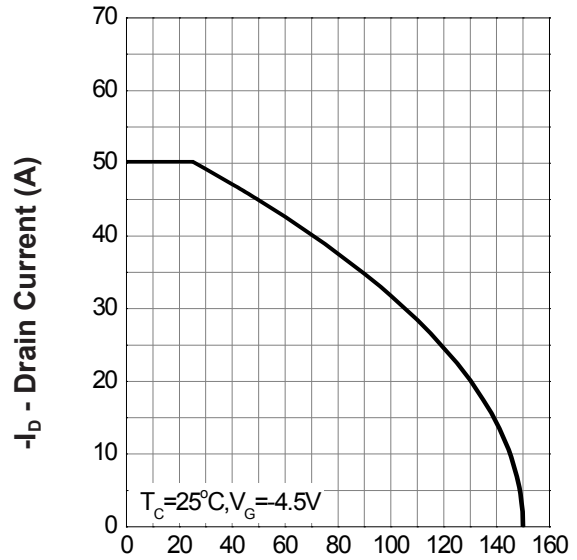
Typical Operating Characteristics

Power Dissipation



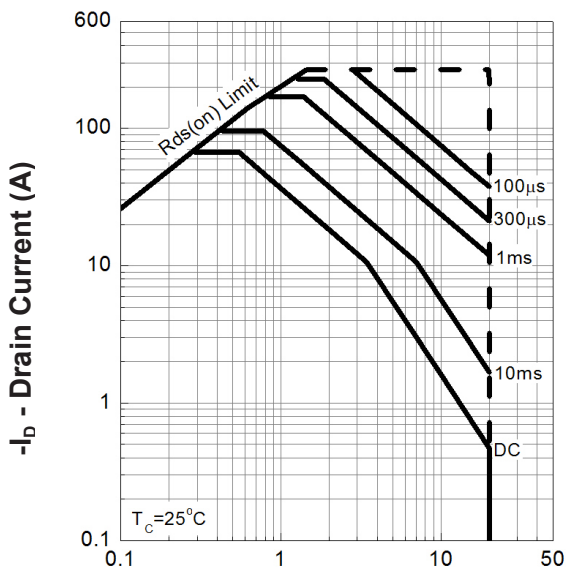
T_j - Junction Temperature ($^\circ\text{C}$)

Drain Current



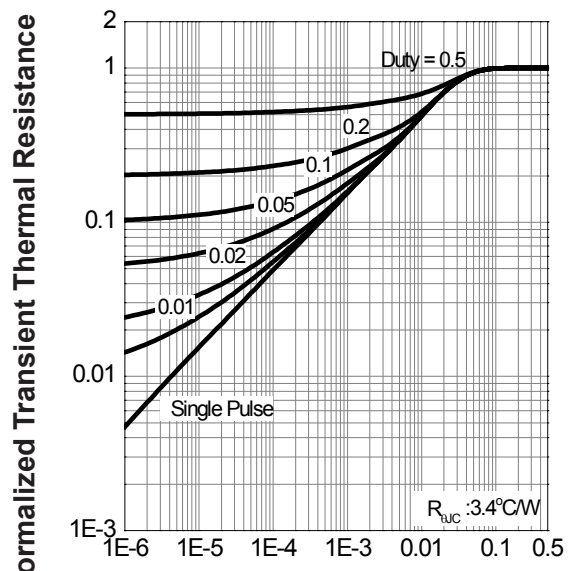
T_j - Junction Temperature ($^\circ\text{C}$)

Safe Operation Area

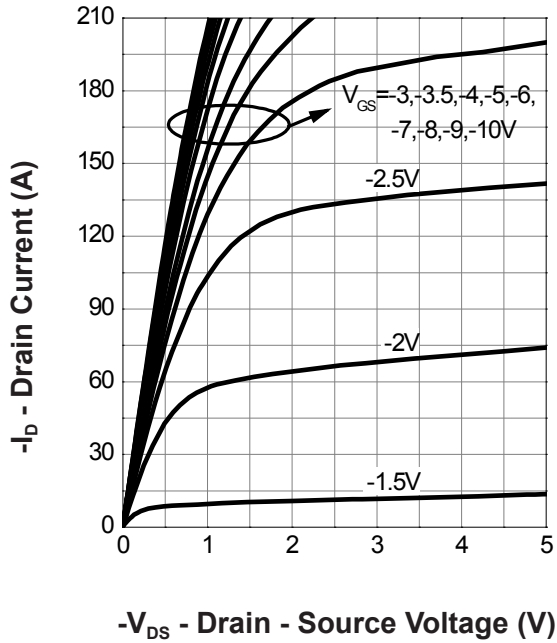
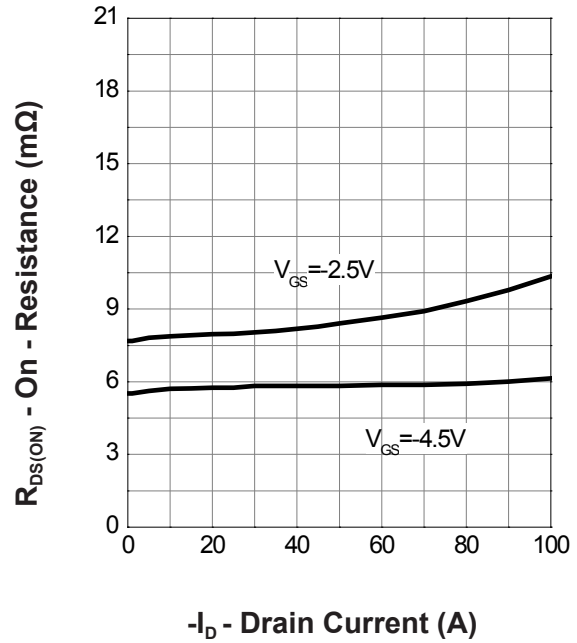
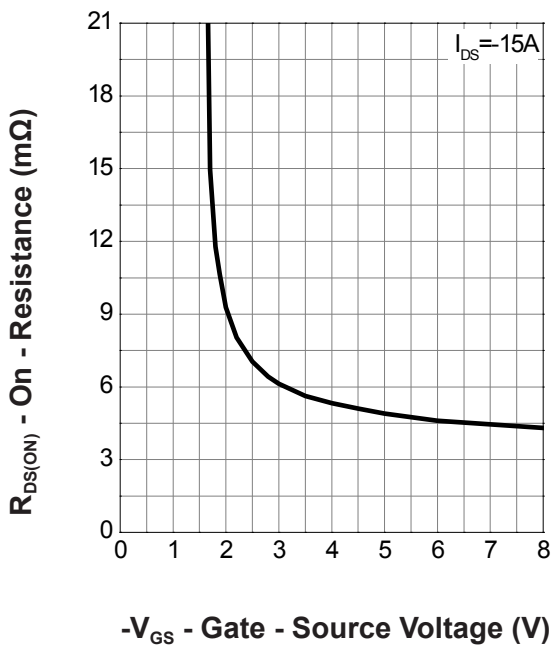
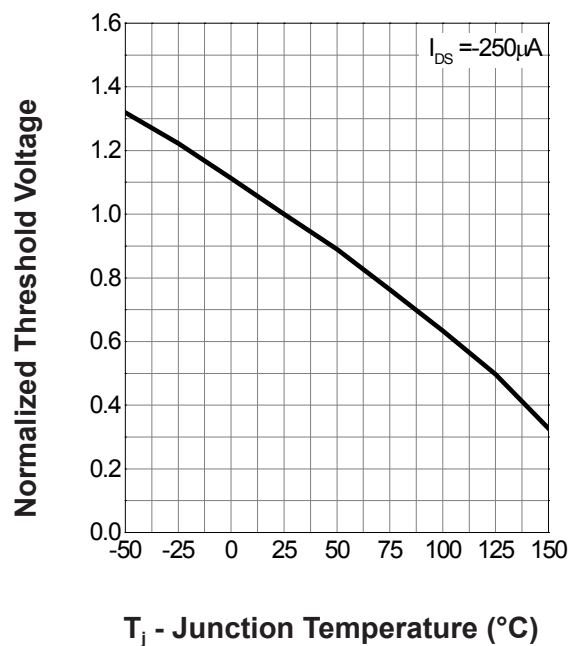


$-V_{DS}$ - Drain - Source Voltage (V)

Thermal Transient Impedance

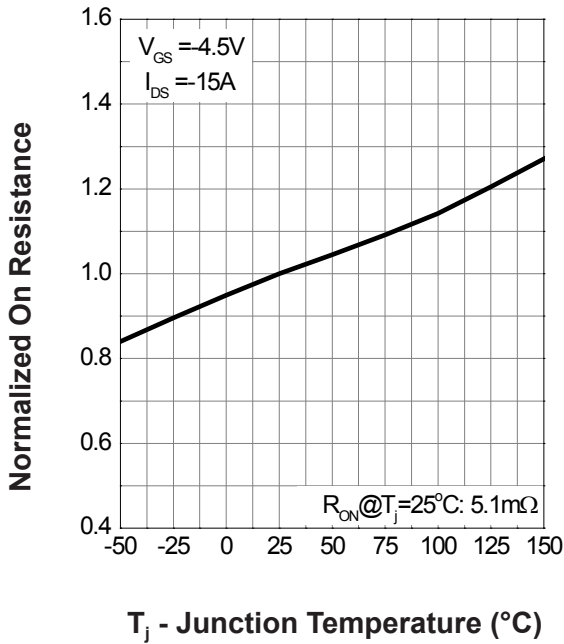


Square Wave Pulse Duration (sec)

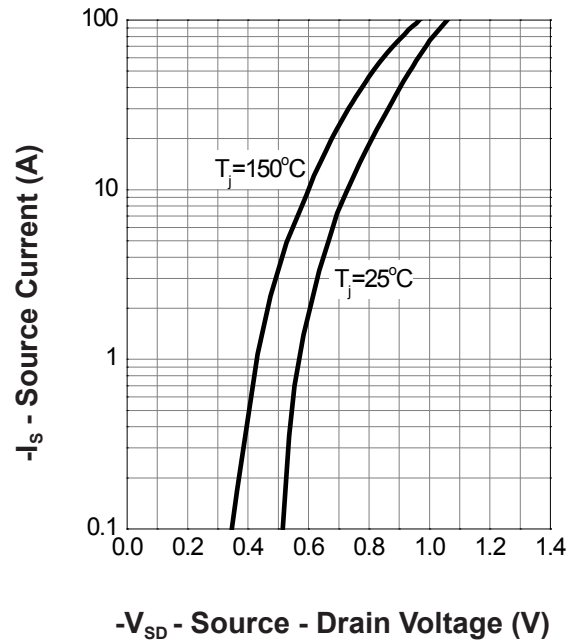
Typical Operating Characteristics(Cont.)
Output Characteristics

Drain-Source On Resistance

Gate-Source On Resistance

Gate Threshold Voltage


Typical Operating Characteristics(Cont.)

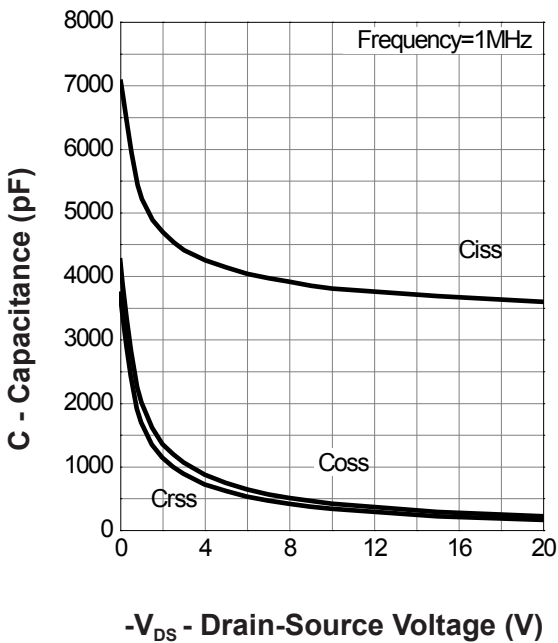
Drain-Source On Resistance



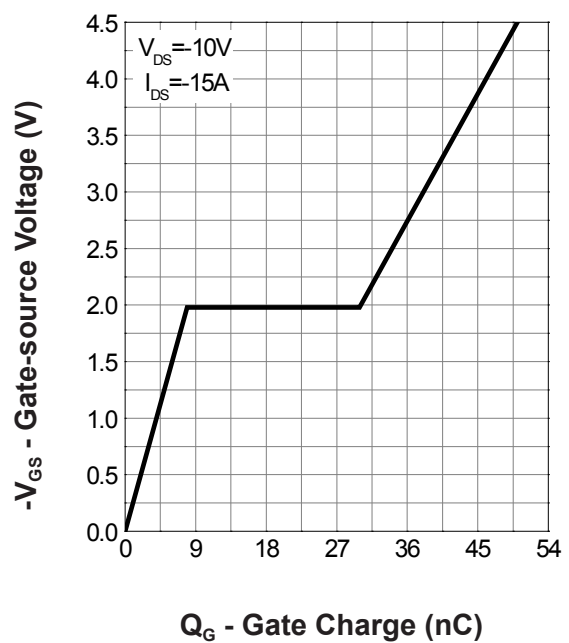
Source-Drain Diode Forward



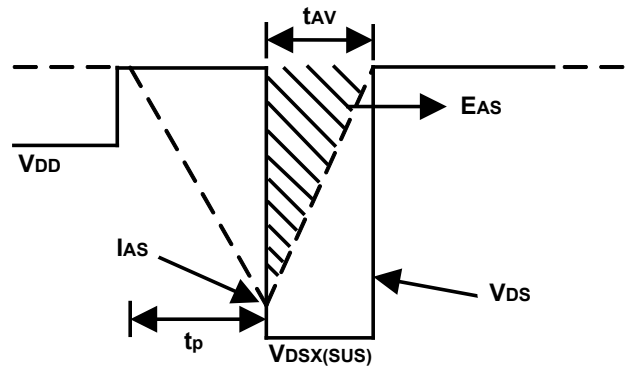
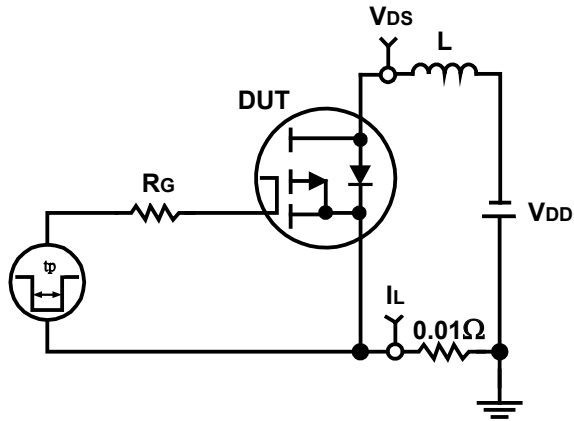
Capacitance



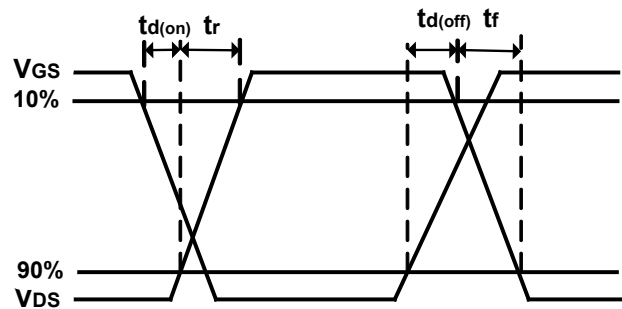
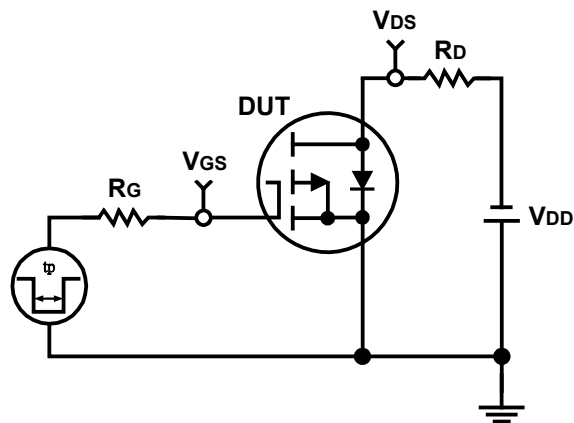
Gate Charge



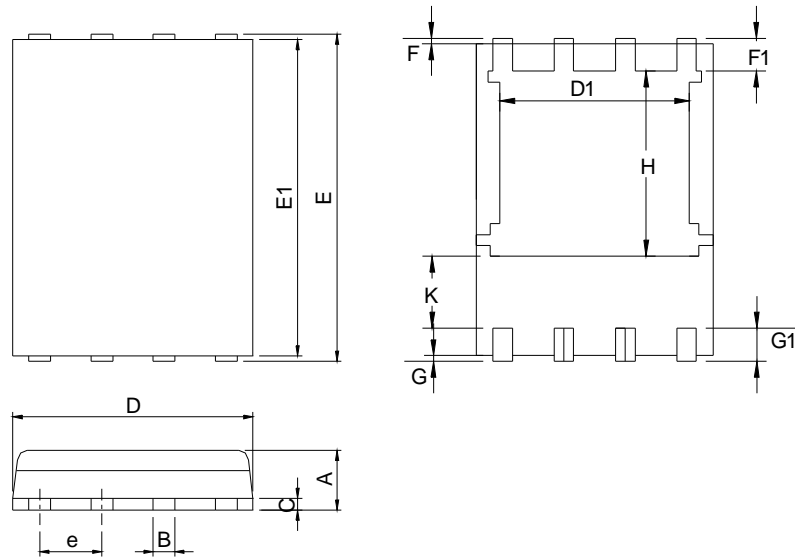
Avalanche Test Circuit and Waveforms



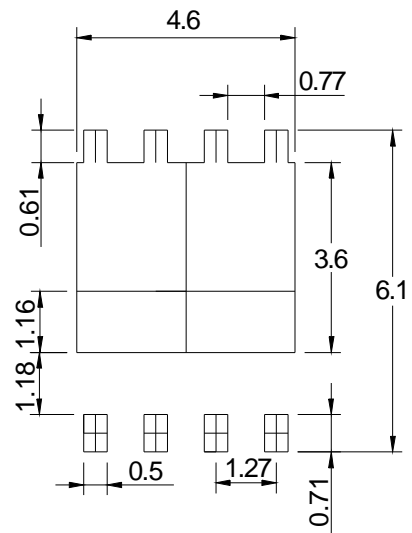
Switching Time Test Circuit and Waveforms



Package Information

DFN5x6-8


SYMBOL	DFN5x6-8			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.90	1.20	0.035	0.047
B	0.3	0.51	0.012	0.020
C	0.19	0.25	0.007	0.010
D	4.80	5.30	0.189	0.209
D1	4.00	4.40	0.157	0.173
E	5.90	6.20	0.232	0.244
E1	5.50	5.80	0.217	0.228
e	1.27 BSC		0.050 BSC	
F	0.05	0.30	0.002	0.012
F1	0.35	0.75	0.014	0.030
G	0.05	0.30	0.002	0.012
G1	0.35	0.75	0.014	0.030
H	3.34	3.9	0.131	0.154
K	0.762	-	0.03	-

RECOMMENDED LAND PATTERN


UNIT: mm

Note : 1.Dimension D, D1,D2 and E1 do not include mold flash or protrusions.
Mold flash or protrusions shall not exceed 10 mil.