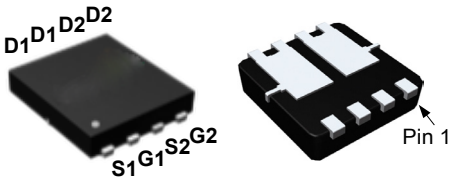
Features

- 60V/20A
  $R_{DS(ON)}$=23mΩ(typ.)@V_{GS}=10V
  $R_{DS(ON)}$=28mΩ(typ.)@V_{GS}=4.5V
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)
- Moisture Sensitivity Level MSL1 (per JEDEC J-STD-020D)

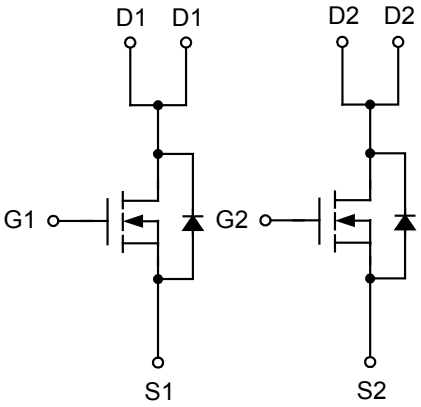
Applications

- Switching applications.

Pin Description



DFN5x6C-8_EP2



N-Channel MOSFET

Absolute Maximum Ratings (T_A=25°C Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		60	V
V_{GSS}	Gate-Source Voltage		±20	
T_J	Maximum Junction Temperature		175	°C
T_{STG}	Storage Temperature Range		-55 to 175	
I_S	Diode Continuous Forward Current	T_C=25°C	20	A
I_D	Continuous Drain Current	T_C=25°C	20	A
		T_C=100°C	14	
I_{DM} [a]	Pulsed Drain Current	T_C=25°C	60	
P_D	Maximum Power Dissipation	T_C=25°C	22.7	W
		T_C=100°C	11.4	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	Steady state	6.6	°C/W
I_D	Continuous Drain Current	T_A=25°C	6.1	A
		T_A=70°C	5.1	
P_D	Maximum Power Dissipation	T_A=25°C	2	W
		T_A=70°C	1.4	
$R_{\theta JA}$ [b]	Thermal Resistance-Junction to Ambient	Steady state	75	°C/W
I_{AS} [c]	Avalanche Current, Single pulse	L=0.5mH	9	A
E_{AS} [c]	Avalanche Energy, Single pulse	L=0.5mH	20	mJ

Note * : Current limited by bonding wire.
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 (initial temperature T_j=25°C).

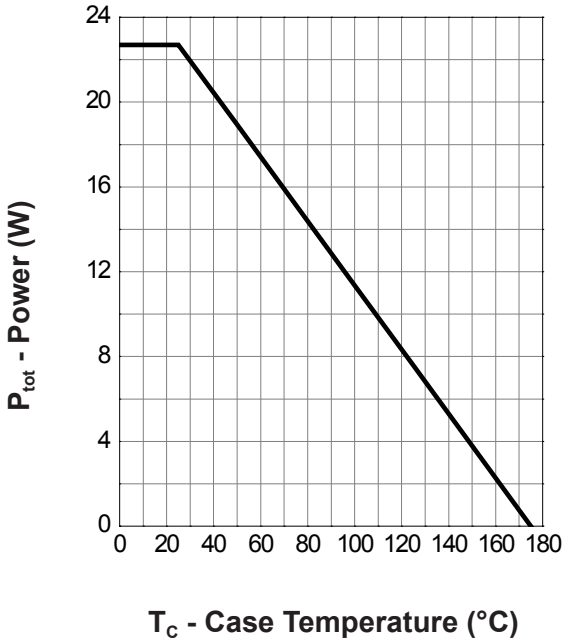
Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=48V, V_{GS}=0V	-	-	1	μA
		T_J=85°C	-	-	30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	1	2	3	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [d]	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=10A	-	23	26	mΩ
		V_{GS}=4.5V, I_{DS}=6A	-	28	31	
Diode Characteristics						
V_{SD} [d]	Diode Forward Voltage	I_{SD}=10A, V_{GS}=0V	-	0.85	1.3	V
t_{rr}	Reverse Recovery Time	I_{SD}=10A, dI_{SD}/dt=100A/μs	-	19	-	ns
Q_{rr}	Reverse Recovery Charge		-	14	-	nC
Dynamic Characteristics [e]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	1	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=30V, Frequency=1.0MHz	-	440	570	pF
C_{oss}	Output Capacitance		-	98	-	
C_{rss}	Reverse Transfer Capacitance		-	17	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=30V, R_L=30Ω, I_{DS}=1A, V_{GEN}=10V, R_G=6Ω	-	8	14	ns
t_r	Turn-on Rise Time		-	7	13	
$t_{d(OFF)}$	Turn-off Delay Time		-	15	27	
t_f	Turn-off Fall Time		-	10	18	
Gate Charge Characteristics [e]						
Q_g	Total Gate Charge	V_{DS}=30V, V_{GS}=4.5V, I_{DS}=10A	-	3.6	-	nC
Q_g	Total Gate Charge	V_{DS}=30V, V_{GS}=10V, I_{DS}=10A	-	7.6	10.6	
Q_{gs}	Gate-Source Charge		-	1.9	-	
Q_{gd}	Gate-Drain Charge		-	0.9	-	

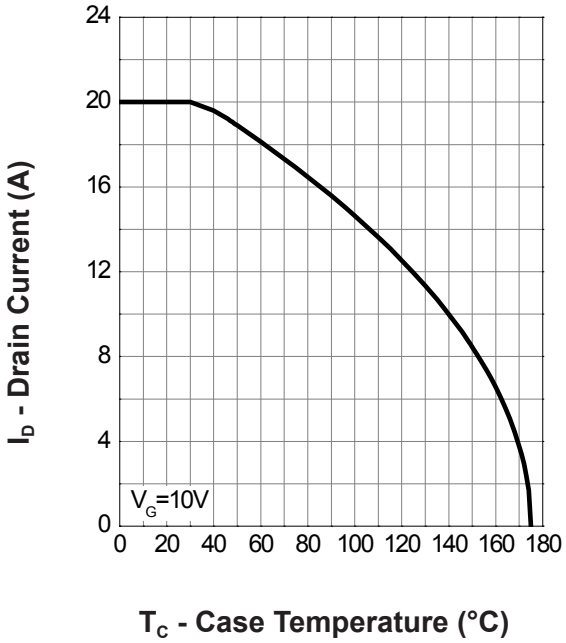
Note d：Pulse test ; pulse width≤300μs, duty cycle≤2%.
Note e：Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

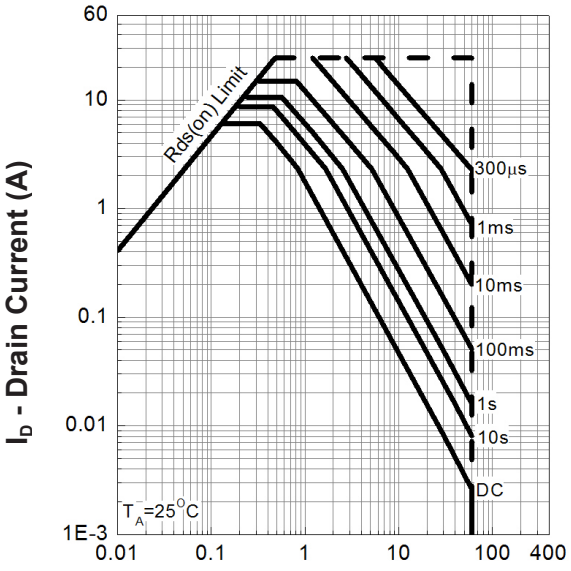
Power Dissipation



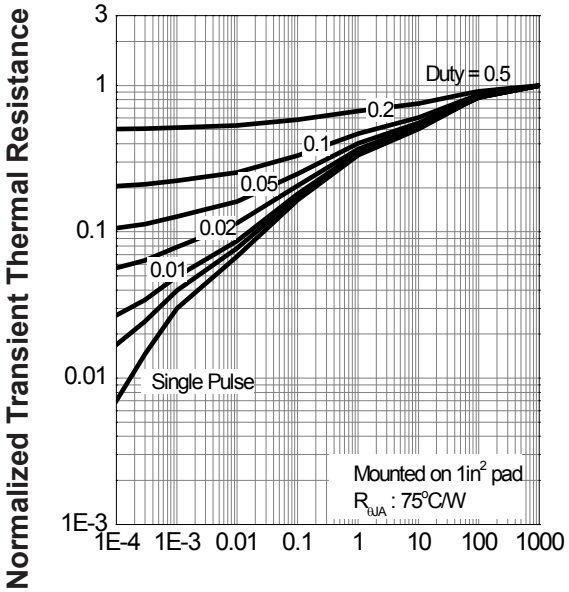
Drain Current



Safe Operation Area

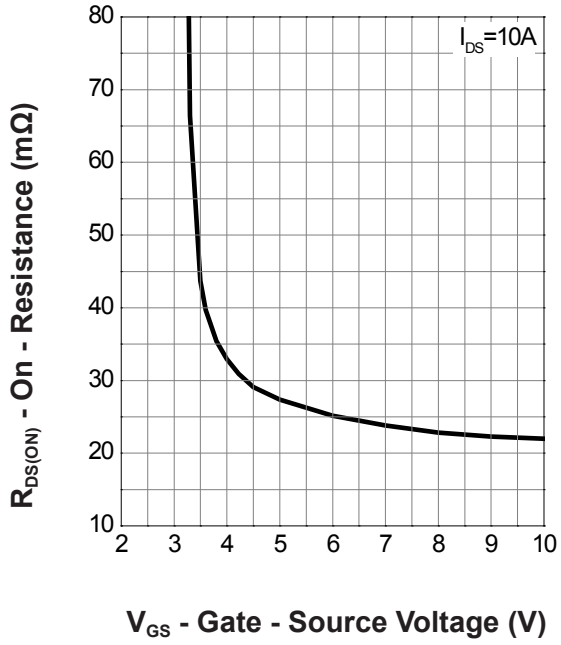


Thermal Transient Impedance

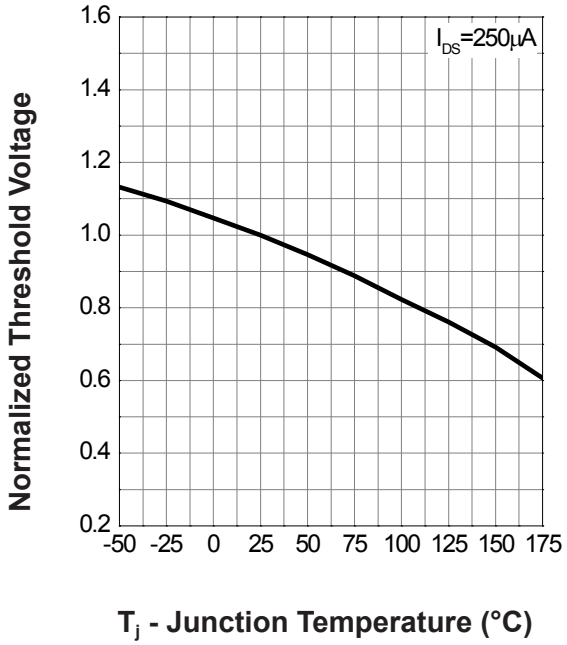


Typical Operating Characteristics(Cont.)

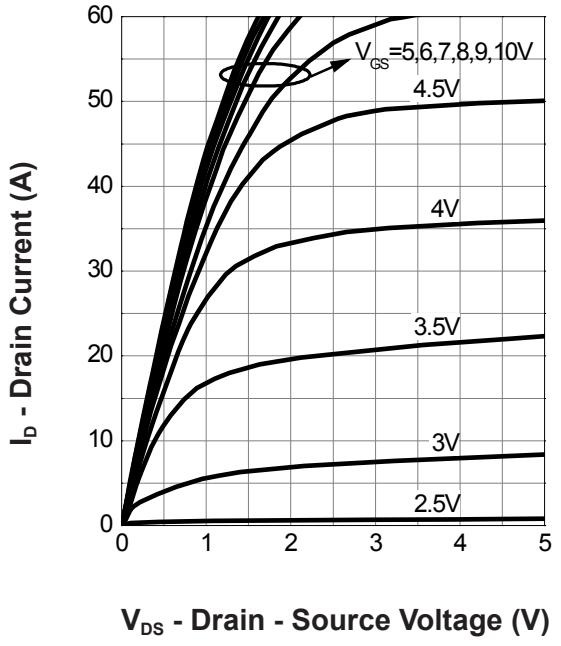
Gate-Source On Resistance



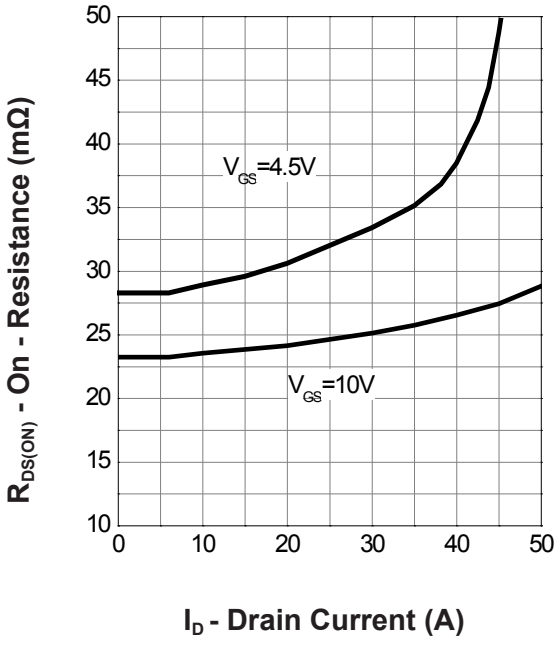
Gate Threshold Voltage



Output Characteristics

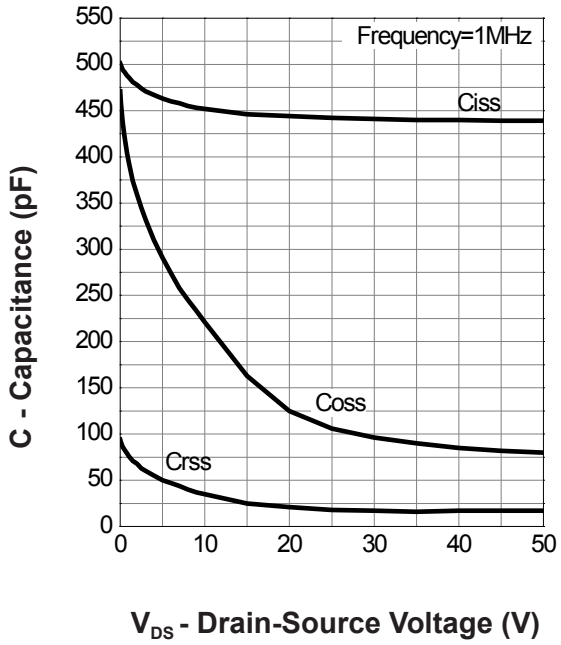


Drain-Source On Resistance

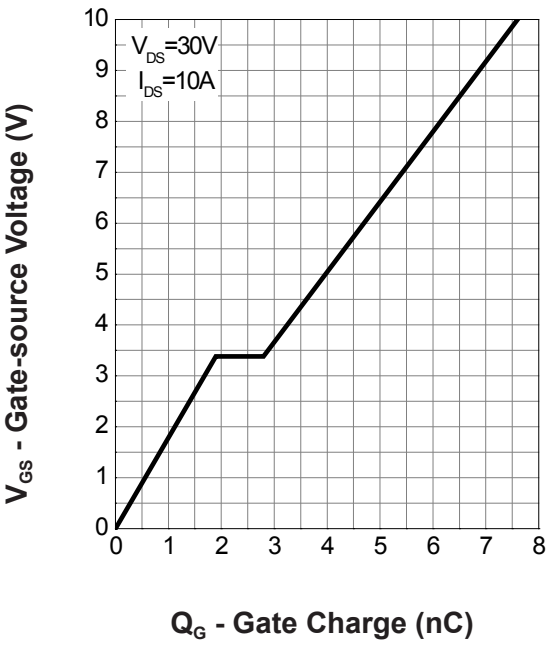


Typical Operating Characteristics(Cont.)

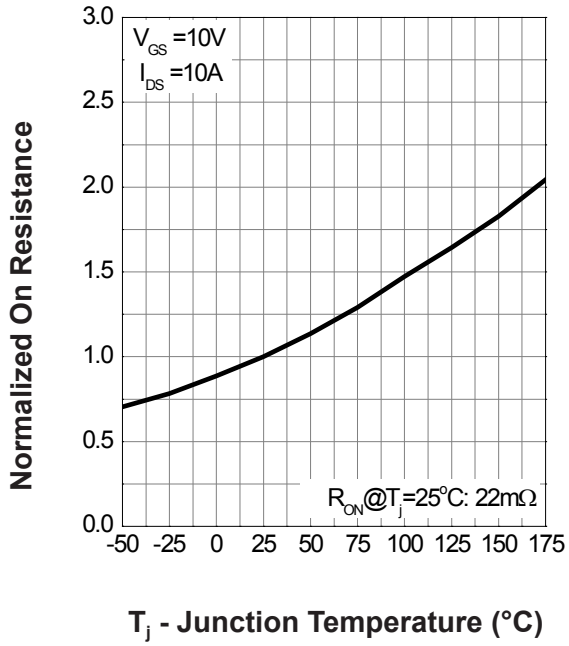
Capacitance



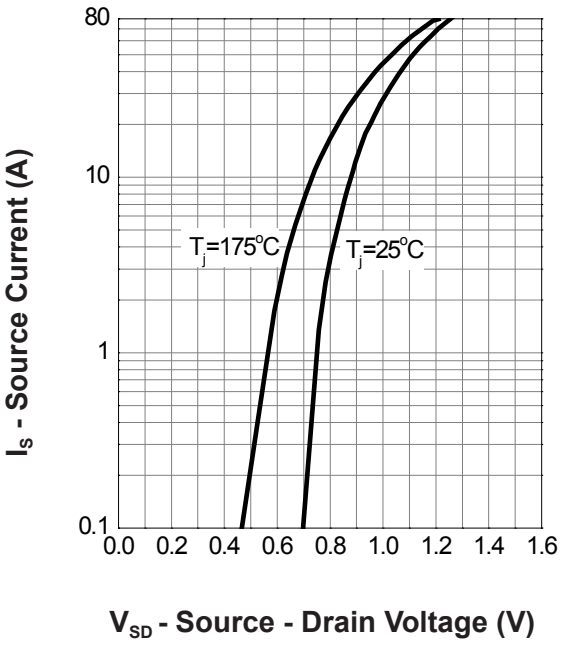
Gate Charge



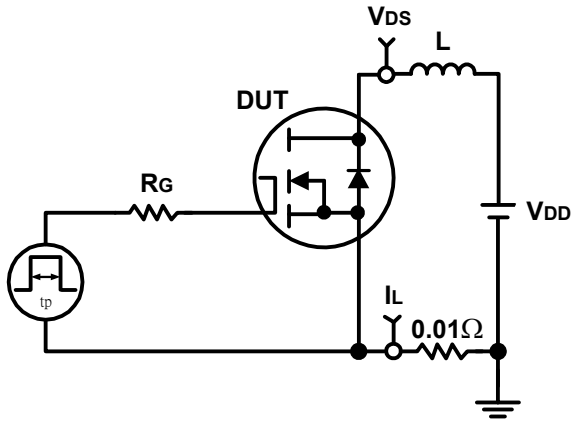
Drain-Source On Resistance

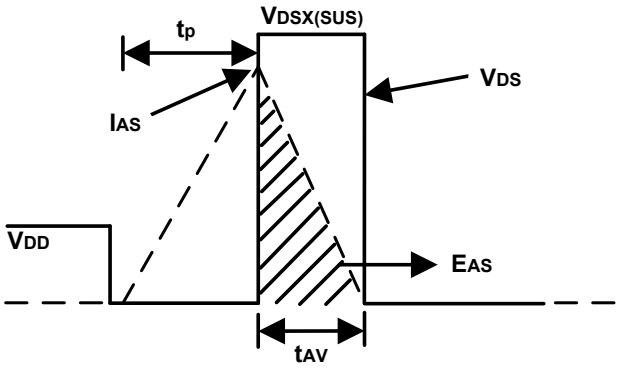


Source-Drain Diode Forward

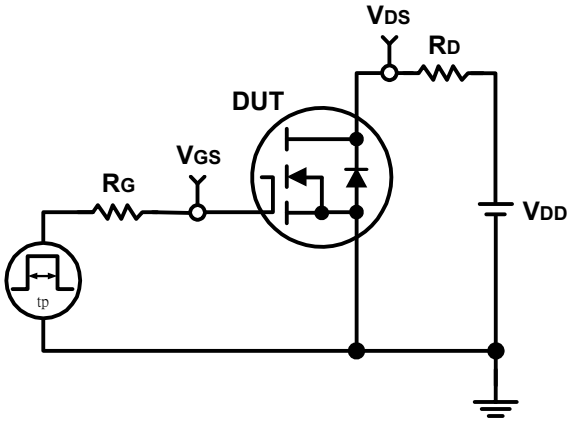


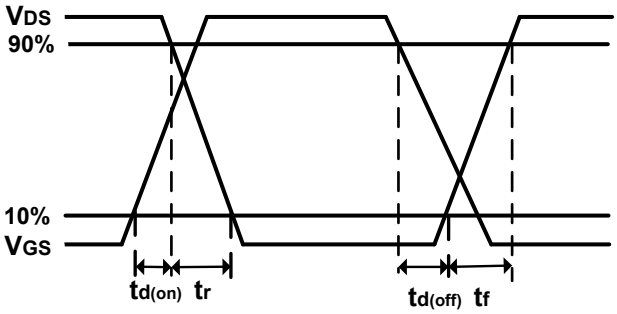
Avalanche Test Circuit and Waveforms





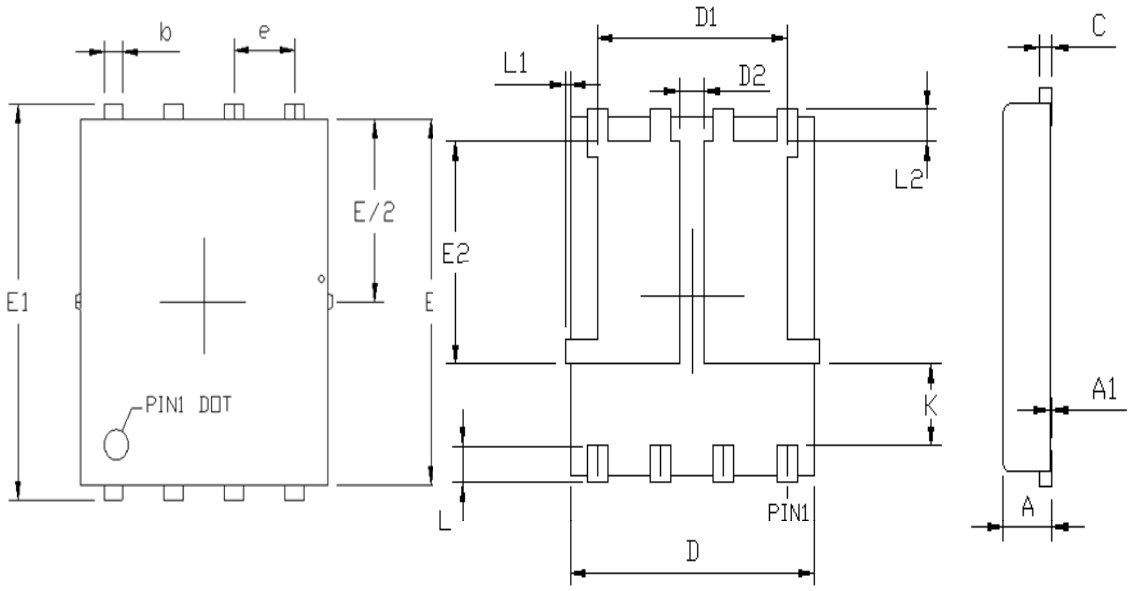
Switching Time Test Circuit and Waveforms





Package Information

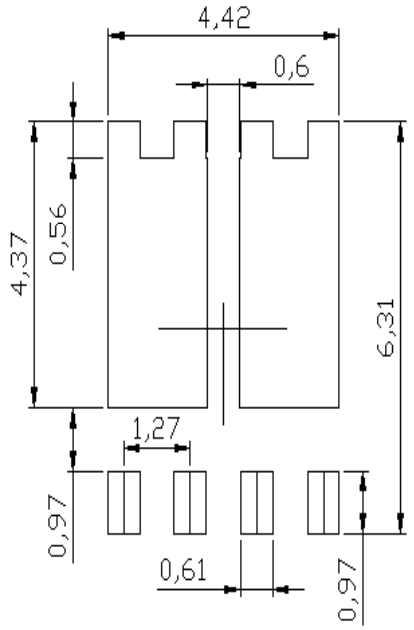
DFN5x6C-8-EP2



Top View　　Bottom View　　Side View

SYMBOLS	DFN5x6C-8_EP2_P			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.900	1.200	0.035	0.047
A1	0.000	0.050	0.000	0.002
b	0.300	0.500	0.012	0.020
c	0.150	0.300	0.006	0.012
D	4.800	5.000	0.189	0.197
D1	3.550	4.550	0.140	0.179
D2	0.500	0.910	0.020	0.036
E	5.650	5.850	0.222	0.230
E1	5.900	6.200	0.232	0.244
E2	3.200	3.780	0.126	0.149
e	1.27 BSC		0.050 BSC	
K	1.100	-	0.043	-
L	0.500	0.800	0.020	0.031
L1	0.000	0.150	0.000	0.006
L2	0.325	0.610	0.013	0.024

RECOMMENDED LAND PATTERN



UNIT: mm