

Description

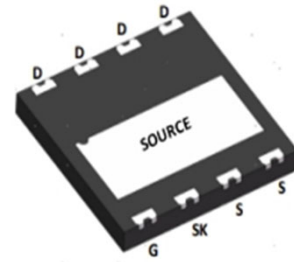
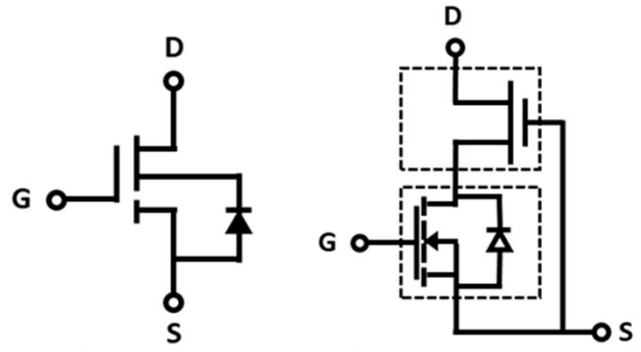
Product Summary		
$V_{DS}(V)$	$R_{DS(on)}(m\Omega)(Typ)$	$I_D(A)$
700	125	12.6

Feature

- Easy to use, compatible with standard gate drivers
- Excellent $Q_G \times R_{DS(on)}$ figure of merit (FOM)
- Low Q_{RR} , no free-wheeling diode required
- Low switching loss
- RoHS compliant and Halogen-free

Applications

- High efficiency power supplies
- Telecom and datacom
- Automotive
- Servo motors


DFN8080-8L (Bottom View)

Schematic Symbol
Cascode Device Structure
Absolute maximum rating@25°C

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	700	V
Gate-Source Voltage	V_{GS}	± 20	V
Transient Drain-Source Voltage ¹⁾	V_{TDS}	800	V
Continuous Drain Current	I_D	$T_C=25^\circ C$	12.6
		$T_C=100^\circ C$	8
Pulsed Drain Current (Pulse Width: 100 μs)	I_{DM}	$T_C=25^\circ C$	50
		$T_C=125^\circ C$	36
Power Dissipation	P_D	38	W
Soldering Peak Temperature	T_{CSOLD}	260	$^\circ C$
Operating Junction and Storage Temperature	T_J, T_{STG}	-55 to 150	$^\circ C$

Thermal Resistance

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	-	3.3	-	$^\circ C/W$
Thermal Resistance, Junction-to-Ambient ²⁾	$R_{\theta JA}$	-	50	-	$^\circ C/W$

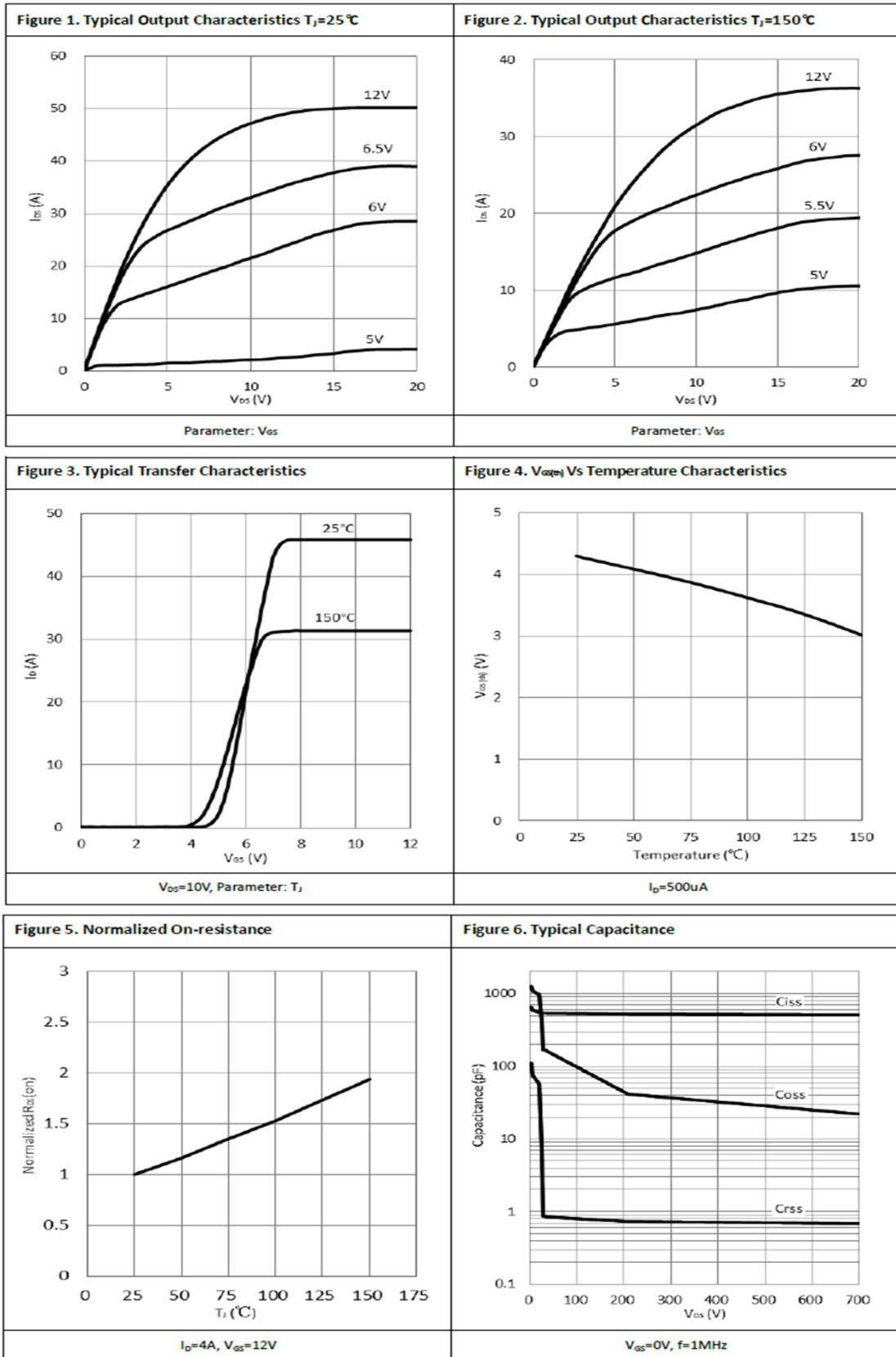
Electrical characteristics per line@25°C (unless otherwise specified)

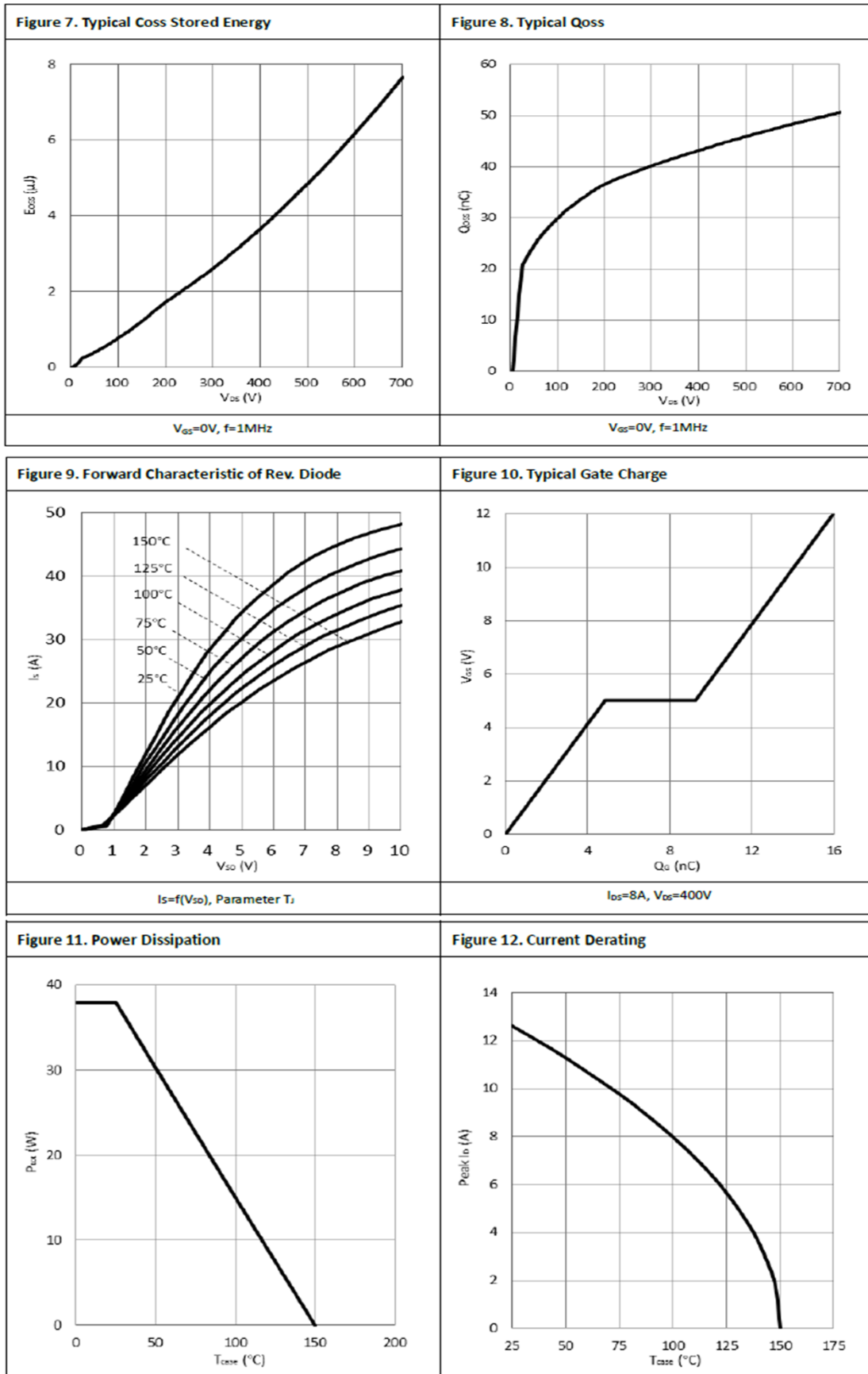
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units	
Statistic Characteristics							
Maximum Drain-Source Voltage	V_{DS-Max}	$V_{GS} = 0V$	700	-	-	V	
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	-	1000	-	V	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=700V,$ $V_{GS}=0V$	$T_J=25^\circ C$	-	10	20	μA
			$T_J=150^\circ C$	-	50	-	
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 150	nA	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 500\mu A$	3.0	4.0	5.0	V	
Gate Threshold Voltage Temperature Coefficient	$\Delta V_{GS(th)}/T_J$		-	-10.7	-	mV/°C	
Drain-Source On-State Resistance ³⁾	$R_{DS(ON)}$	$V_{GS}=12V,$ $I_D=4A$	$T_J=25^\circ C$	-	125	160	mΩ
			$T_J=150^\circ C$	-	250	-	
Dynamic Characteristics							
Input Capacitance	C_{iss}	$V_{DS} = 400V, V_{GS} = 0V,$ $f = 1MHz$	-	506	-	pF	
Output Capacitance	C_{oss}		-	28	-		
Reverse Transfer Capacitance	C_{rss}		-	0.7	-		
Effective Output Capacitance, Energy Related	$C_{o(er)}$	$V_{GS} = 0V,$ $V_{DS} = 0-400V$	-	46	-	pF	
Effective Output Capacitance, Time Related	$C_{o(tr)}$		-	108	-		
Output Charge	Q_{oss}		-	43	-		nC
Turn-on Delay Time	$t_{d(on)}$	$V_{DS} = 400V, I_D = 8A,$ $V_{GS} = 0-12V, R_G = 40\Omega$	-	44	-	ns	
Turn-on Rise Time	t_r		-	16	-		
Turn-Off Delay Time	$t_{d(off)}$		-	40	-		
Turn-Off Fall Time	t_f		-	12	-		
Total Gate Charge	Q_g	$V_{DS} = 400V, I_D = 8A,$ $V_{GS} = 0-12V$	-	16	-	nC	
Gate-Source Charge	Q_{gs}		-	4.8	-		
Gate-Drain Charge	Q_{gd}		-	4.4	-		
Reverse Diode Characteristics							
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=8A$	$V_{GS}=0V, I_S=4A$	-	1.2	-	V
			$T_J=25^\circ C$	-	1.6	-	
			$T_J=150^\circ C$	-	2.2	-	
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_S=8A,$ $V_{DD}=400V,$ $di/dt=1000A/\mu s$	-	21	-	ns	
Reverse Recovery Charge	Q_{rr}		-	43	-	μC	

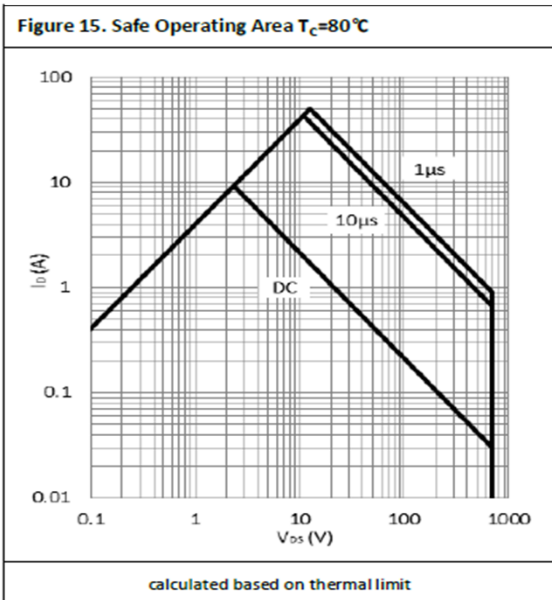
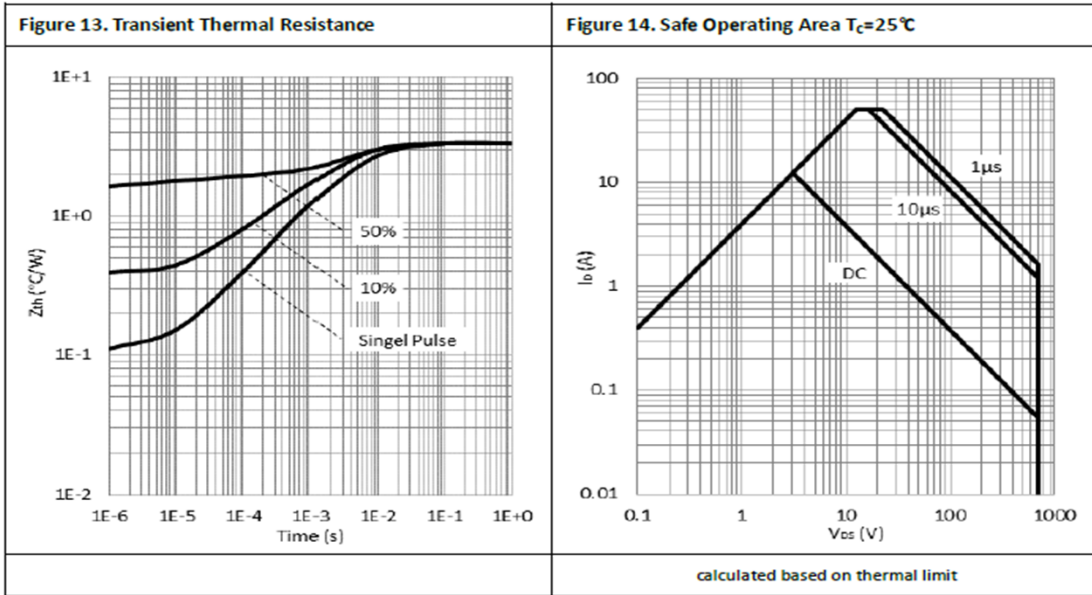
Notes:

- Off-state spike duty cycle < 0.01, spike duration < 2 μs
- Device on one layer epoxy PCB for drain connection (vertical and without air stream cooling, with 6cm²copper area and 70 μm thickness)
- Dynamic on-resistance; see Figure 18 and 19 for test circuit and configurations

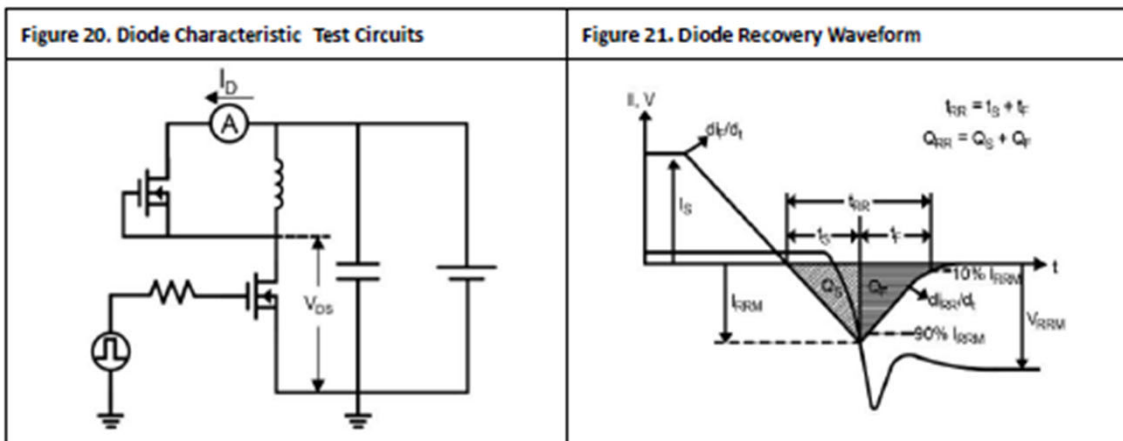
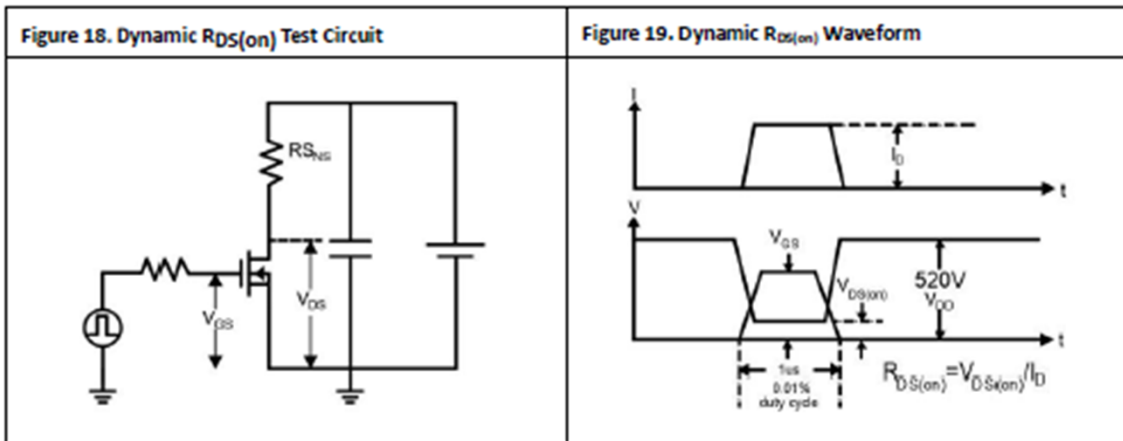
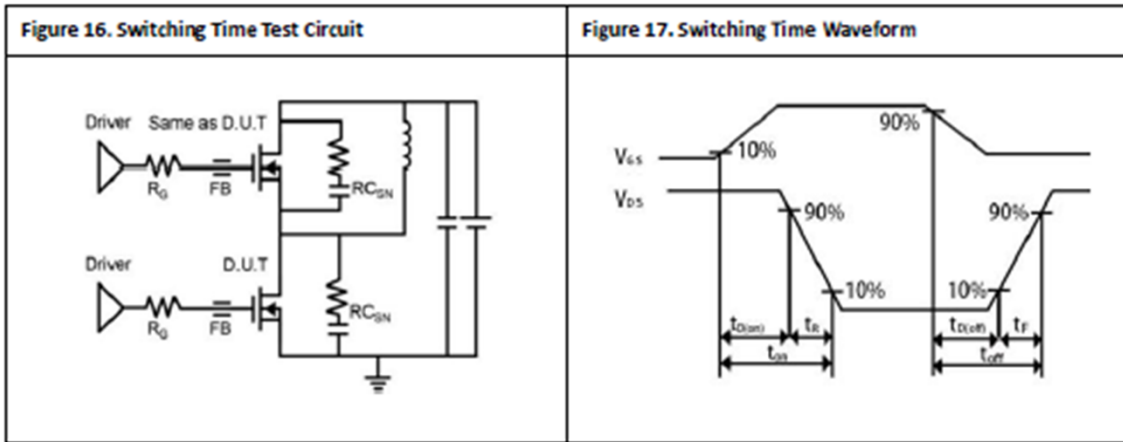
Typical Characteristics



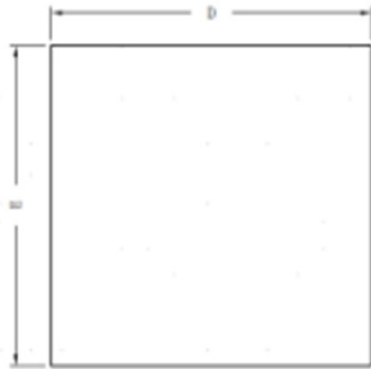




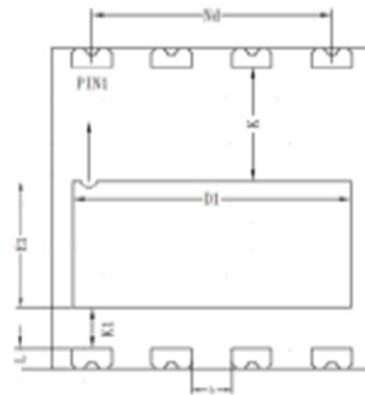
Test Circuits and Waveforms



Product Dimension (DFN8080-8L)



TOP VIEW




BOTTOM VIEW



SIDE VIEW

SYMBOL	Millimeter		
	Min	Nom	Max
A	0.80	0.90	1.15
A1	0	0.02	0.05
c	—	0.20	—
b	0.90	1.00	1.10
D	7.90	8.00	8.10
D1	6.85	6.95	7.05
E	7.90	8.00	8.10
E1	3.10	3.20	3.30
e	2.00BSC		
Nd	6.00BSC		
K	2.70	2.80	2.90
K1	0.90	1.00	1.10
L	0.40	0.50	0.60


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