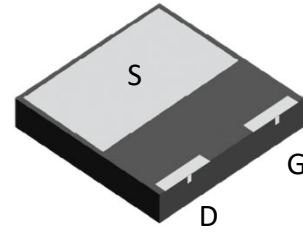


Description

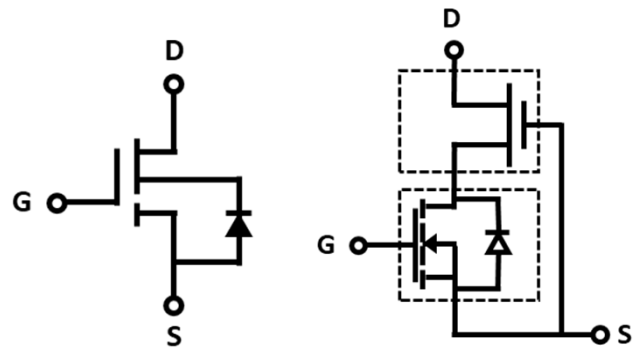
Product Summary		
$V_{DS}(V)$	$R_{DS(on)}(m\Omega)(Typ)$	$I_D(A)$
700	320	5.4


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

DFN8080-3L (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	$T_C=25^\circ C$	5.4
		$T_C=100^\circ C$	3.4
Pulsed Drain Current (Pulse Width: 100 μs)	I_{DM}	$T_C=25^\circ C$	16
		$T_C=100^\circ C$	12
Power Dissipation	P_D	18	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	$R_{\theta JC}$	-	7	-	$^\circ C/W$
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}	$V_{DS}=700V, V_{GS}=0V$	$T_J=25^\circ C$	-	4	15	μA
			$T_J=150^\circ C$	-	30	-	
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 150	nA	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 500\mu A$	1.1	1.8	2.5	V	
Drain-Source On-State Resistance ³⁾	$R_{DS(ON)}$	$V_{GS}=8V, I_D=4A$	$T_J=25^\circ C$	-	320	400	m Ω
			$T_J=150^\circ C$	-	640	-	
Dynamic Characteristics							
Input Capacitance	C_{iss}	$V_{DS} = 400V, V_{GS} = 0V, f = 1MHz$	-	288	-	pF	
Output Capacitance	C_{oss}		-	12	-		
Reverse Transfer Capacitance	C_{rss}		-	0.6	-		
Effective Output Capacitance, Energy Related	$C_{o(er)}$	$V_{GS} = 0V, V_{DS} = 0-400V$	-	18	-	pF	
Effective Output Capacitance, Time Related	$C_{o(tr)}$		-	54	-		
Output Charge	Q_{oss}		-	21.7	-		nC
Turn-on Delay Time	$t_{d(on)}$	$V_{DS} = 400V, I_D = 3A, V_{GS} = 0-12V, R_G = 47\Omega$	-	32	-	ns	
Turn-on Rise Time	t_r		-	6	-		
Turn-Off Delay Time	$t_{d(off)}$		-	50	-		
Turn-Off Fall Time	t_f		-	5	-		
Total Gate Charge	Q_g	$V_{DS} = 400V, I_D = 3.4A, V_{GS} = 0-8V$	-	5.8	-	nC	
Gate-Source Charge	Q_{gs}		-	1.7	-		
Gate-Drain Charge	Q_{gd}		-	2.5	-		
Reverse Diode Characteristics							
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=1.7A$	-	1.2	-	V	
			$V_{GS}=0V, I_S=3A$	$T_J=25^\circ C$	-		1.6
		$T_J=150^\circ C$		-	2.3		-
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_S=3A, V_{DD}=400V, di/dt=1000A/\mu s$	-	14	-	ns	
Reverse Recovery Charge	Q_{rr}		-	21.7	-	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

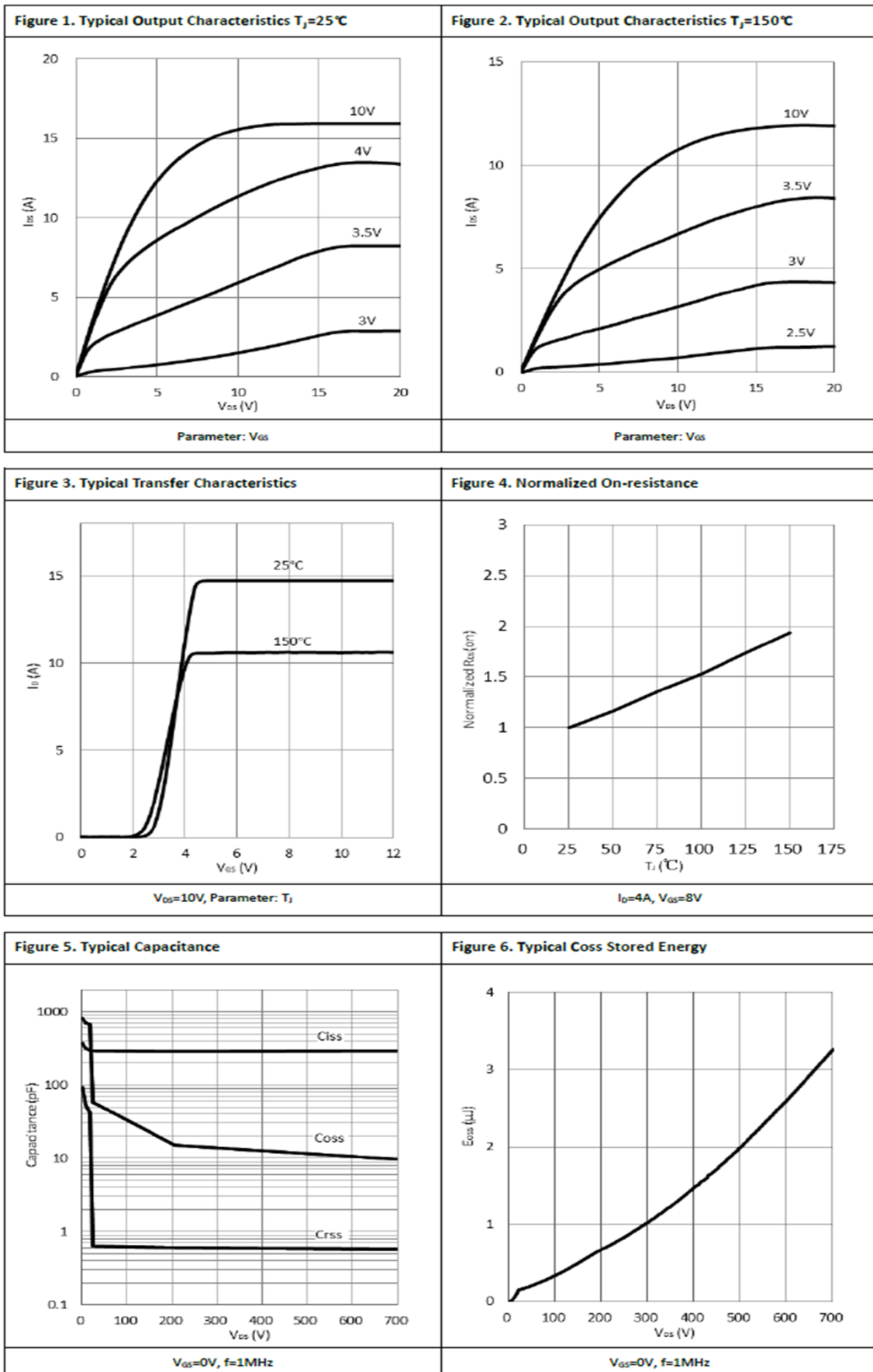
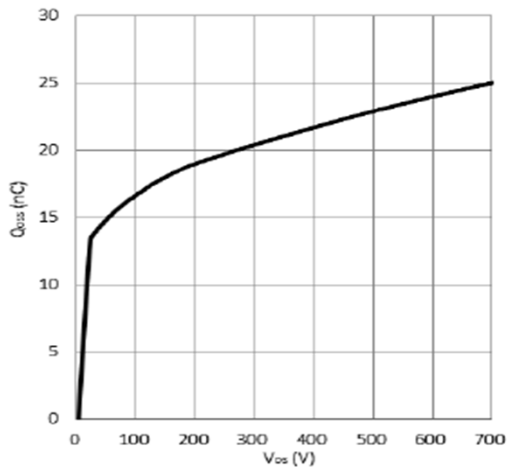
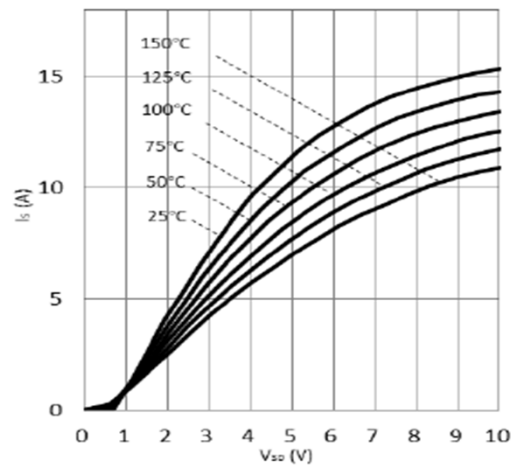


Figure 7. Typical Qoss



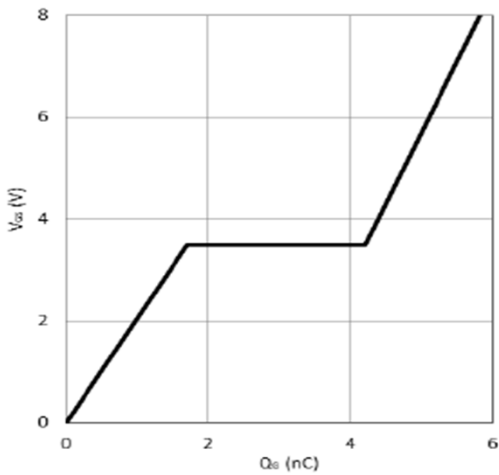
$V_{DS}=0V, f=1MHz$

Figure 8. Forward Characteristic of Rev. Diode



$I_S=f(V_{SD}), \text{Parameter } T_J$

Figure 9. Typical Gate Charge



$I_{DS}=3.4A, V_{DS}=400V$

Figure 10. Power Dissipation

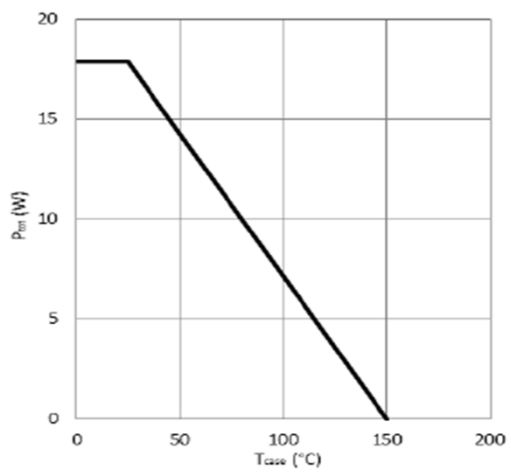


Figure 11. Current Derating

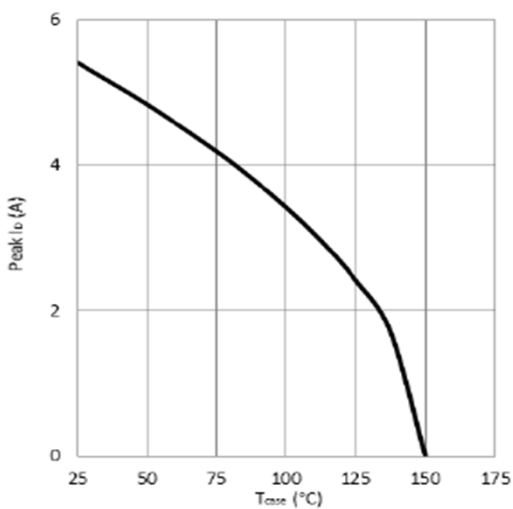
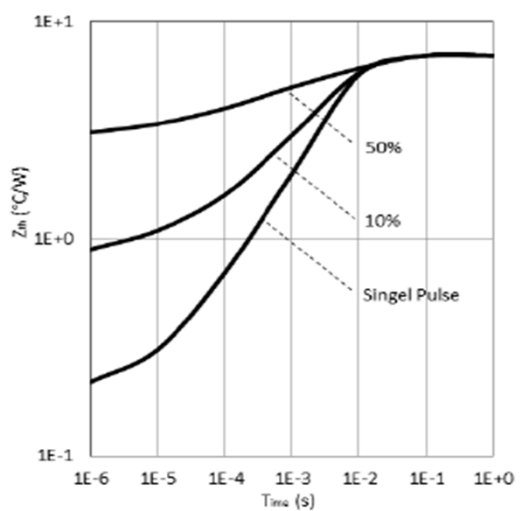
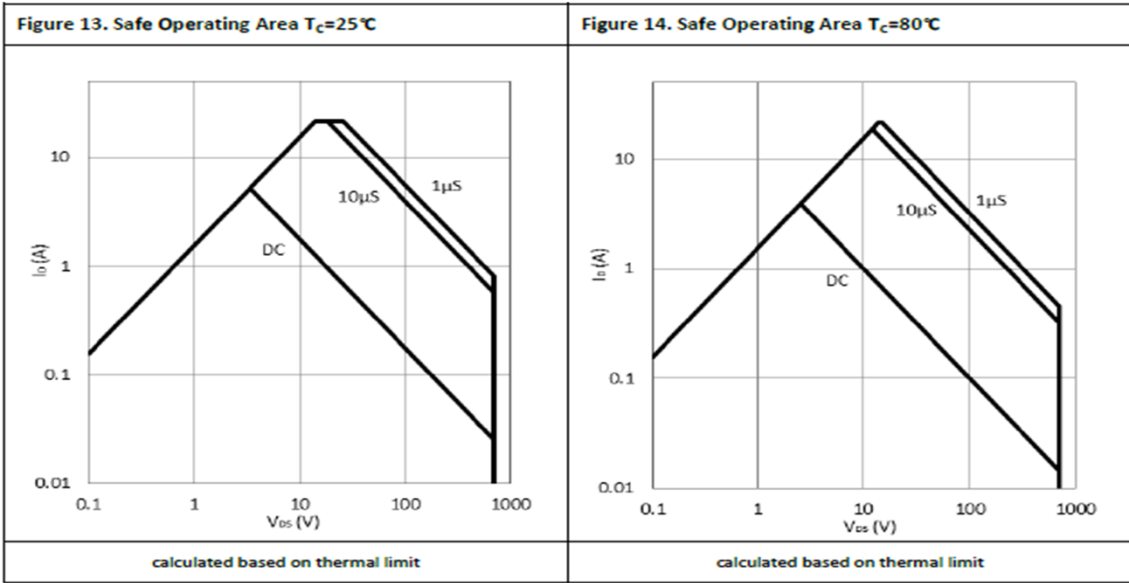


Figure 12. Transient Thermal Resistance

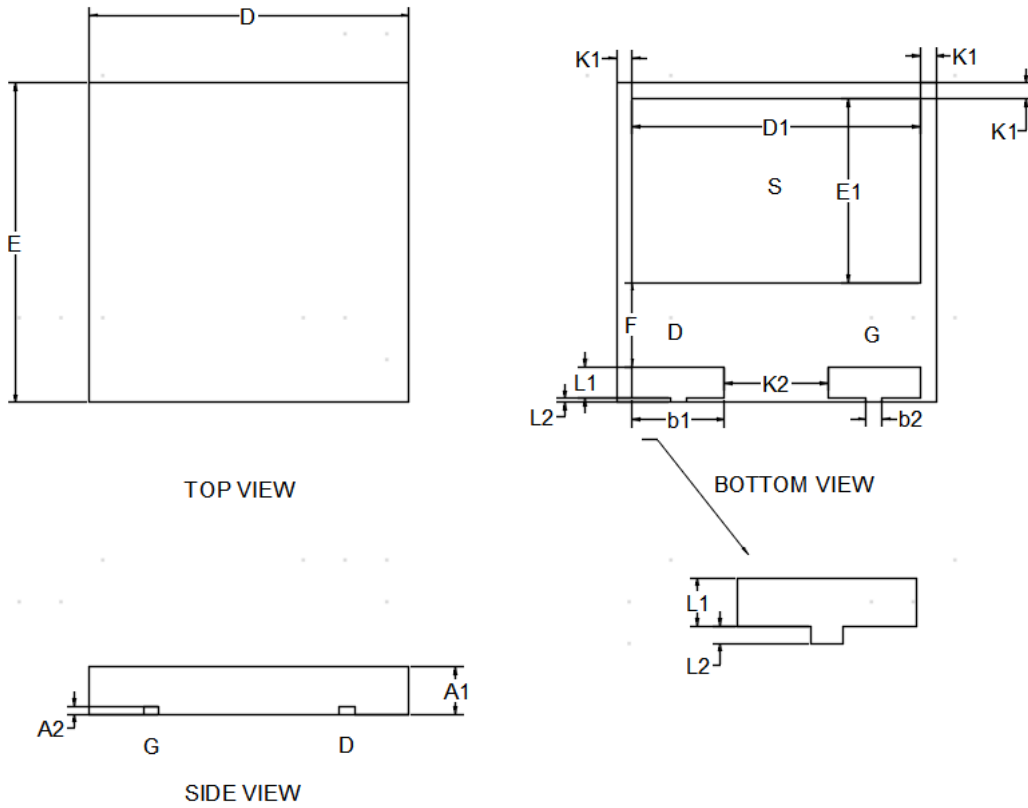




Test Circuits and Waveforms


<p>Figure 15. Switching Time Test Circuit</p>	<p>Figure 16. Switching Time Waveform</p>
<p>Figure 17. Dynamic $R_{DS(on)}$ Test Circuit</p>	<p>Figure 18. Dynamic $R_{DS(on)}$ Waveform</p>
<p>Figure 19. Diode Characteristic Test Circuits</p>	<p>Figure 20. Diode Recovery Waveform</p>

Product Dimension (DFN8080-3L)



SYMBOL	Millimeter		
	Min	Nom	Max
A1	0.80	0.90	1.15
A2	0.19	0.203	0.22
b1	2.20	2.30	2.40
b2	0.80REF		
D	7.90	8.00	8.10
E	7.90	8.00	8.10
D1	6.90	7.20	7.50
E1	4.40	4.60	4.80
L1	0.70	0.80	0.90
L2	0.12REF		
K1	0.30	0.40	0.50
K2	2.50	2.60	2.70
F	2.05	2.15	2.35


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