

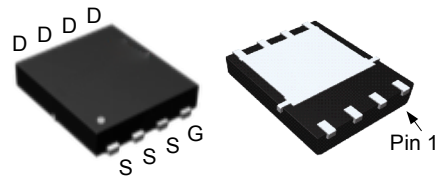
Features

- 60V/80A,
 $R_{DS(ON)} = 6m\Omega$ (typ.) @ $V_{GS} = 10V$
- Reliable and Rugged
- Lead Free and Green Devices Available
 (RoHS Compliant)

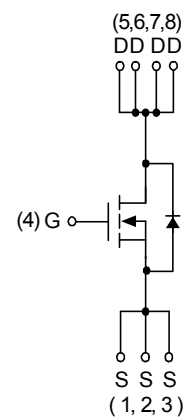
Applications

- Secondary Side Synchronous Rectification
- DC-DC Converter
- Motor Control
- Load Switching

Pin Description



DFN5x6-8



N-Channel MOSFET

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

Symbol	Parameter	Rating	Unit
Common Ratings			
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 25	
T_J	Maximum Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	
I_S	Diode Continuous Forward Current	$T_C=25^\circ\text{C}$	A
I_D	Continuous Drain Current	$T_C=25^\circ\text{C}$	
		$T_C=100^\circ\text{C}$	
I_{DM}	Pulsed Drain Current	$T_C=25^\circ\text{C}$	
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$	W
		$T_C=100^\circ\text{C}$	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	Steady State	$^\circ\text{C/W}$
I_D	Continuous Drain Current	$T_A=25^\circ\text{C}$	A
		$T_A=70^\circ\text{C}$	
P_D	Maximum Power Dissipation	$T_A=25^\circ\text{C}$	W
		$T_A=70^\circ\text{C}$	
$R_{\theta JA}^c$	Thermal Resistance-Junction to Ambient	$t \leq 10\text{s}$	$^\circ\text{C/W}$
		Steady State	
I_{AS}^b	Avalanche Current, Single pulse ($L=0.5\text{mH}$)	20	A
E_{AS}^b	Avalanche Energy, Single pulse ($L=0.5\text{mH}$)	100	mJ

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

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

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

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

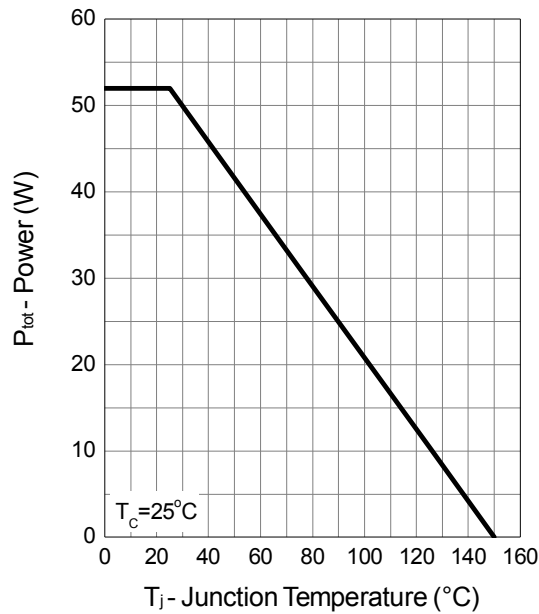
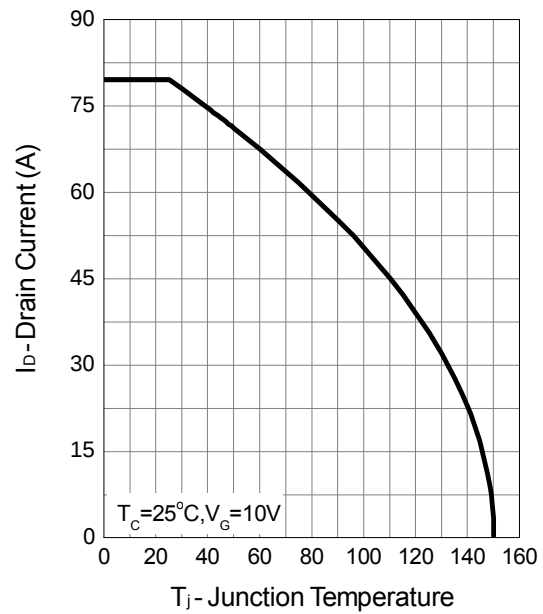
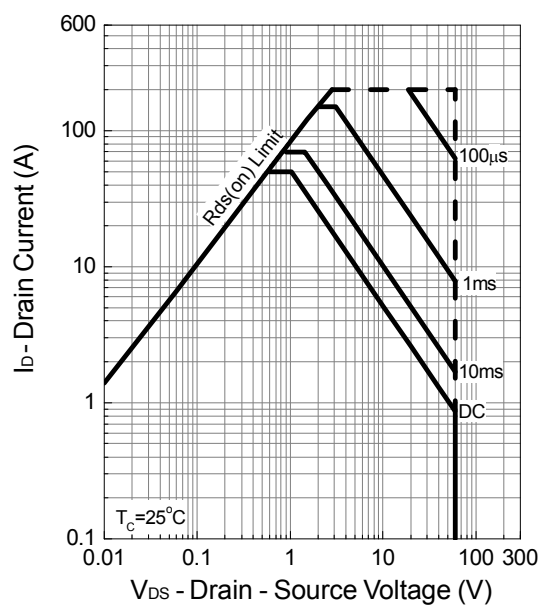
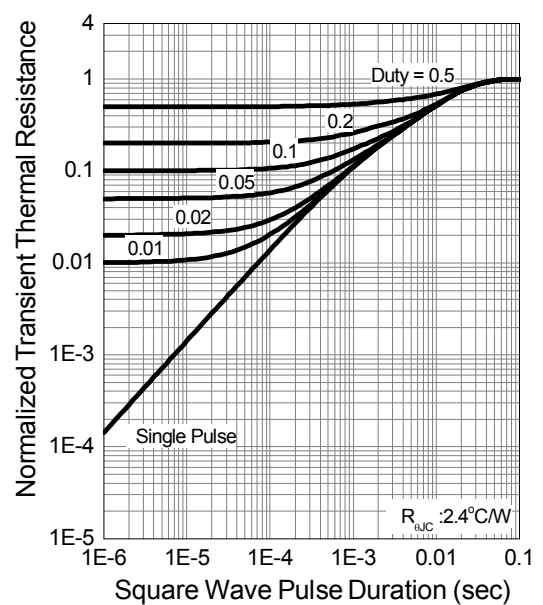
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	60	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =48V, V _{GS} =0V	-	-	1	μA
		T _J =85°C	-	-	30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	2	3	4	V
I _{GSS}	Gate Leakage Current	V _{GS} =±25V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^d	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =25A	-	6	9	mΩ
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =25A, V _{GS} =0V	-	0.8	1.3	V
t _{rr}	Reverse Recovery Time	I _{SD} =25A, dI _{SD} /dt=100A/μs	-	28	-	ns
Q _{rr}	Reverse Recovery Charge		-	30	-	nC
Dynamic Characteristics ^e						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz	-	1.0	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =30V, Frequency=1.0MHz	-	2500	3500	pF
C _{oss}	Output Capacitance		-	215	-	
C _{rss}	Reverse Transfer Capacitance		-	105	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =30V, R _L =30Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	20	36	ns
t _r	Turn-on Rise Time		-	9	16	
t _{d(OFF)}	Turn-off Delay Time		-	55	99	
t _f	Turn-off Fall Time		-	20	36	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	V _{DS} =30V, V _{GS} =10V, I _{DS} =25A	-	45	65	nC
Q _{gs}	Gate-Source Charge		-	9	-	
Q _{gd}	Gate-Drain Charge		-	8.5	-	

Note d : Pulse test ; pulse width≤300μs, duty cycle≤2%.

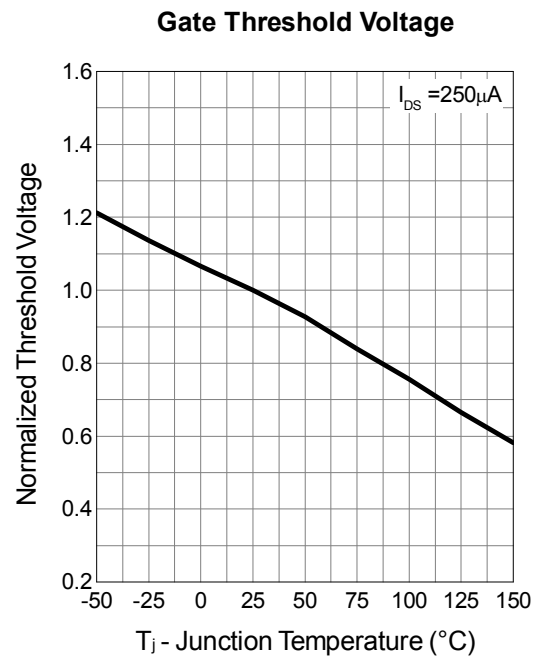
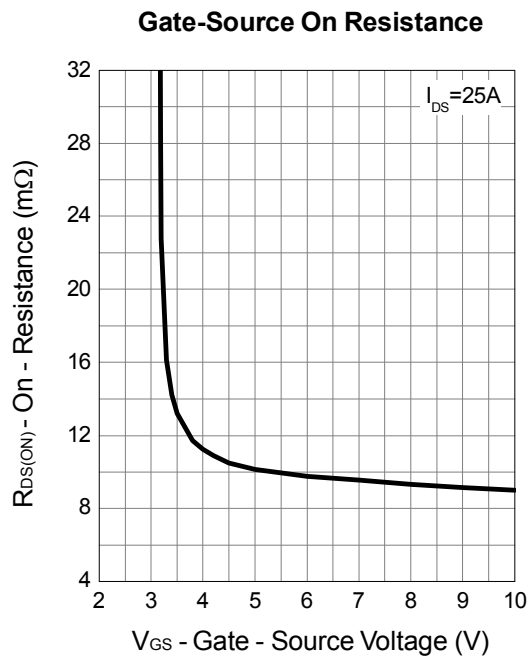
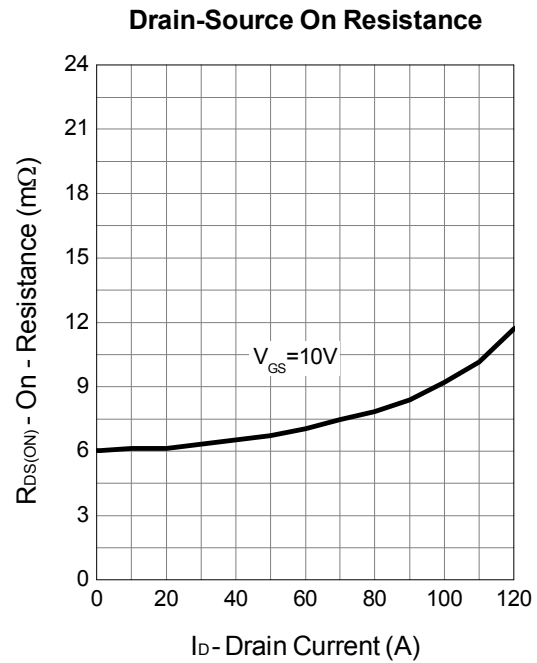
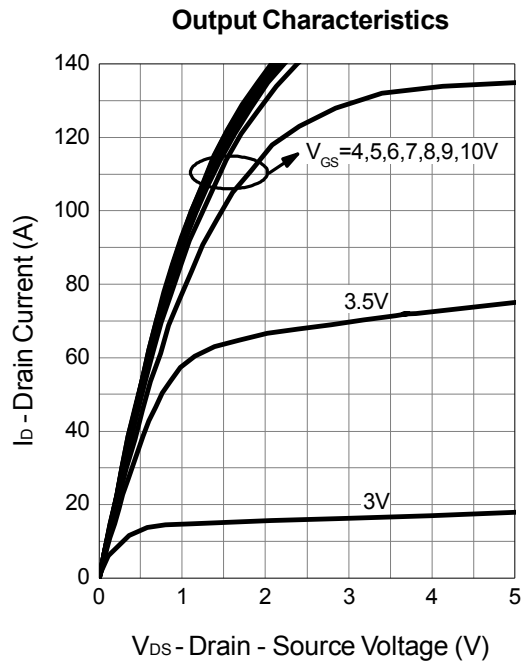
Note e : Guaranteed by design, not subject to production testing.

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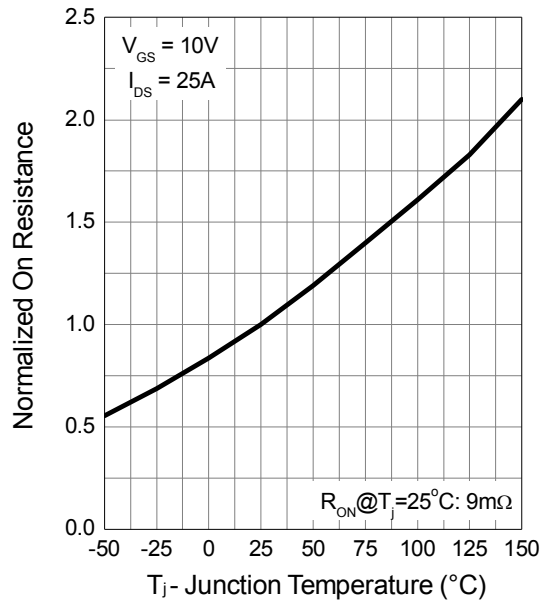
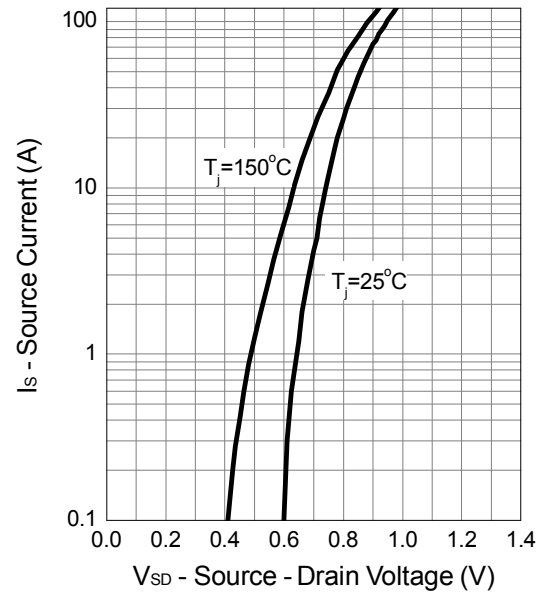
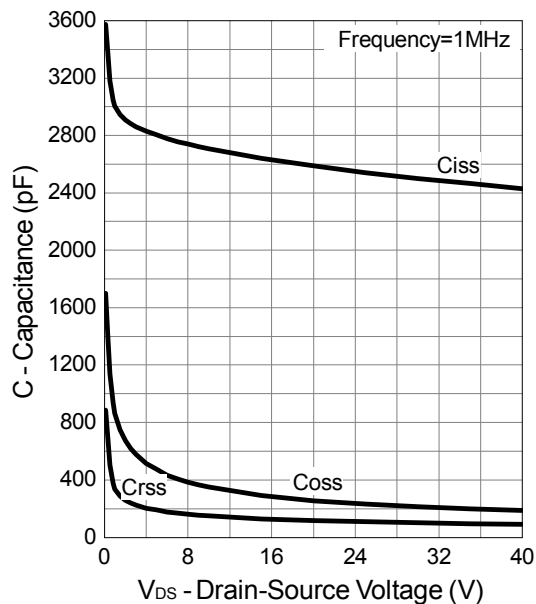
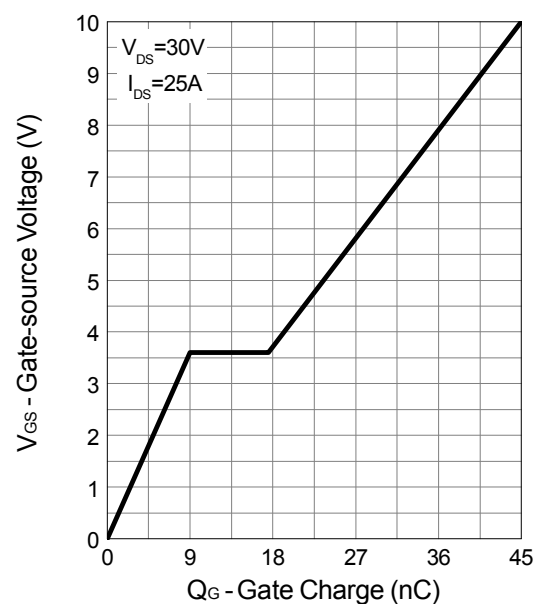
Typical Operating Characteristics

Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


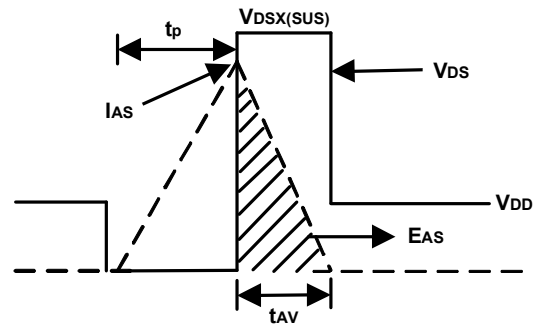
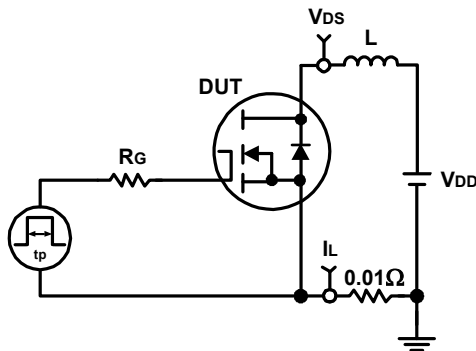
Typical Operating Characteristics (Cont.)



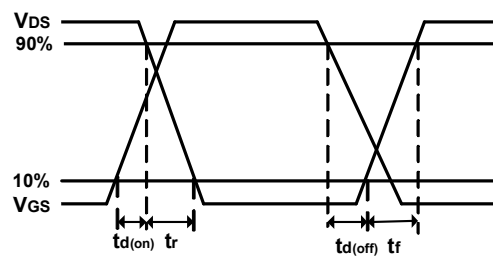
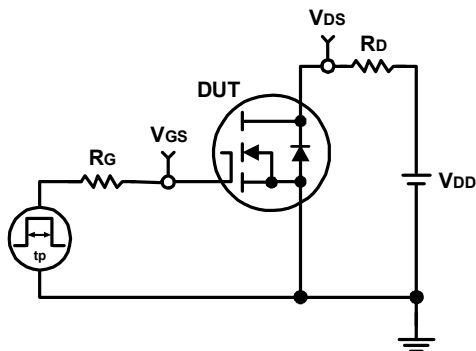
Typical Operating Characteristics (Cont.)

Drain-Source On Resistance

Source-Drain Diode Forward

Capacitance

Gate Charge


Avalanche Test Circuit and Waveforms

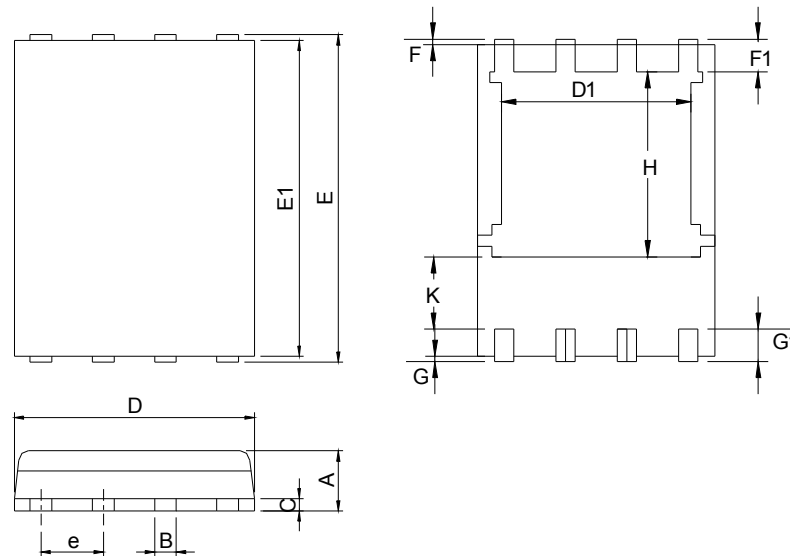


Switching Time Test Circuit and Waveforms



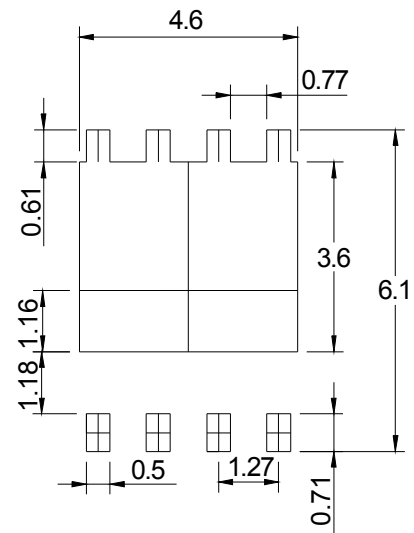
Package Information

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.