

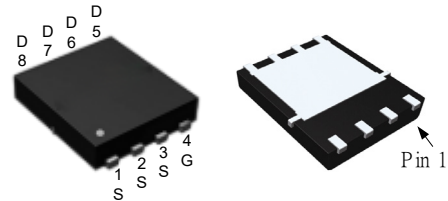
Features

- -40V/-130A
 $R_{DS(ON)} = 3m\Omega (typ.) @ V_{GS} = -10V$
 $R_{DS(ON)} = 4m\Omega (typ.) @ V_{GS} = -4.5V$
- 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)

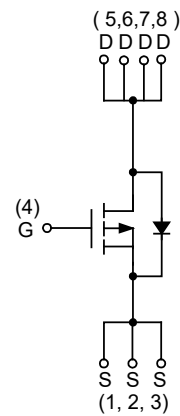
Applications

- SMPS Synchronous Rectification.
- Load Switch.
- DC-DC Conversion.
- Or-ing.

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		-40	V
V _{GSS}	Gate-Source Voltage		±20	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	
I _S	Diode Continuous Forward Current	T _C =25°C	-130	A
I _D	Continuous Drain Current	T _C =25°C	-130	A
		T _C =100°C	-98	
I _{DM} ^a	Pulsed Drain Current	T _C =25°C	-300	
P _D	Maximum Power Dissipation	T _C =25°C	208.3	W
		T _C =100°C	83.3	
R _{θJC}	Thermal Resistance-Junction to Case		0.6	°C/W
R _{θJA} ^b	Thermal Resistance-Junction to Ambient		55	°C/W
I _{AS} ^c	Avalanche Current, Single pulse	L=0.5mH	-60	A
E _{AS} ^c	Avalanche Energy, Single pulse	L=0.5mH	900	mJ

Note * : Current limited by bonding wire.

Note a : Pulse width limited by maximum 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 $T_J=25^{\circ}\text{C}$).

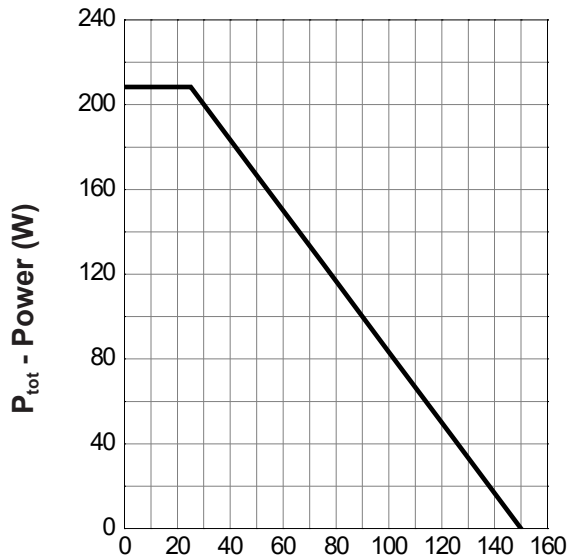
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

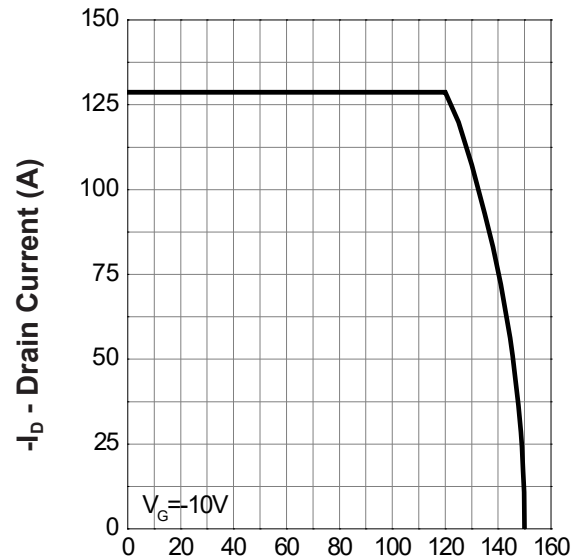
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-40	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-32V, V _{GS} =0V T _J =85°C	-	-	-1	μA
			-	-	-30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-1.3	-1.8	-2.3	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} =-20A V _{GS} =-4.5V, I _{DS} =-15A	-	3 4	4 5.5	mΩ
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =-20A, V _{GS} =0V	-	-0.8	-1.1	V
t _{rr}	Reverse Recovery Time	I _{SD} =-20A, dI _{SD} /dt=100A/μs	-	41	-	ns
Q _{rr}	Reverse Recovery Charge		-	42	-	nC
Dynamic Characteristics ^e						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	3	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-20V, Frequency=1.0MHz	-	10400	13520	pF
C _{oss}	Output Capacitance		-	980	-	
C _{rss}	Reverse Transfer Capacitance		-	650	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-20V, R _L =20Ω, I _{DS} =-1A, V _{GEN} =-10V, R _G =6Ω	-	22	40	ns
t _r	Turn-on Rise Time		-	23	42	
t _{d(OFF)}	Turn-off Delay Time		-	260	468	
t _f	Turn-off Fall Time		-	144	260	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	V _{DS} =-20V, V _{GS} =-4.5V, I _{DS} =-20A	-	90	-	nC
Q _g	Total Gate Charge	V _{DS} =-20V, V _{GS} =-10V, I _{DS} =-20A	-	180	270	
Q _{gs}	Gate-Source Charge		-	29	-	
Q _{gd}	Gate-Drain Charge		-	36	-	

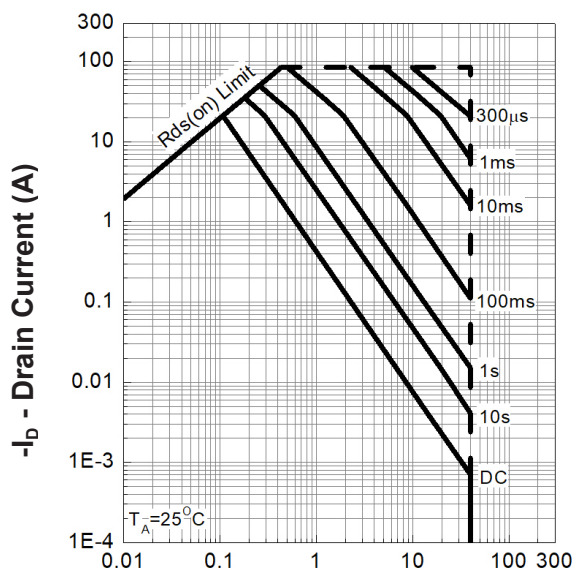
Note d : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

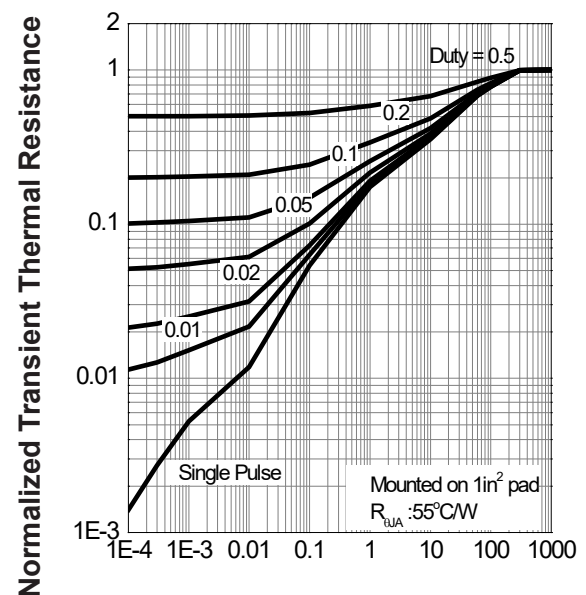
Note e : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

Power Dissipation

 T_c - Case Temperature ($^{\circ}\text{C}$)

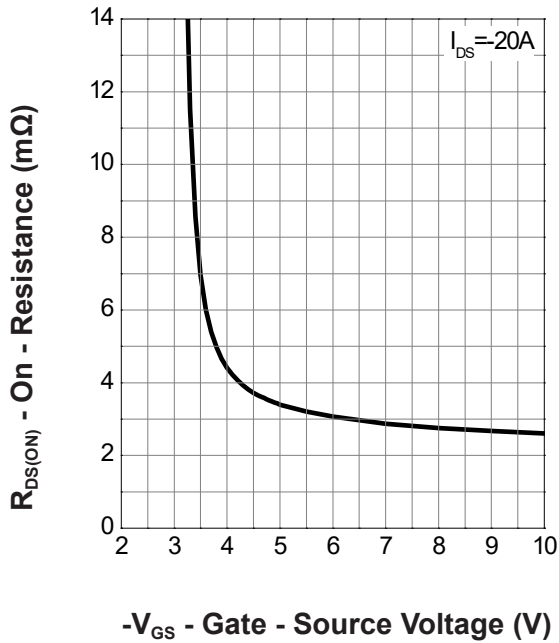
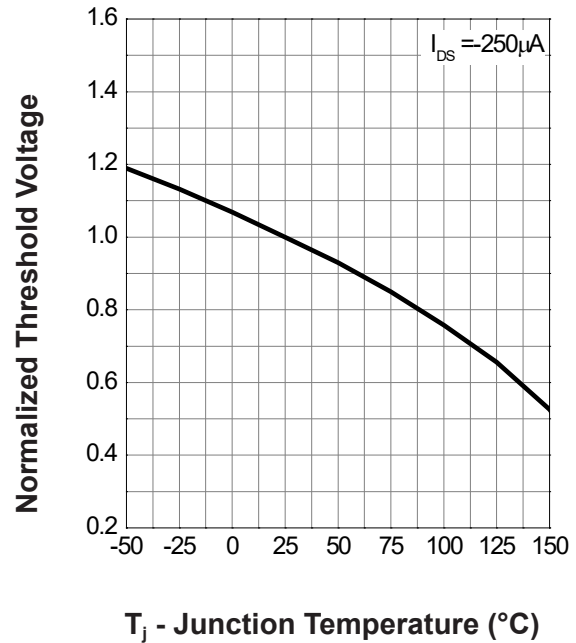
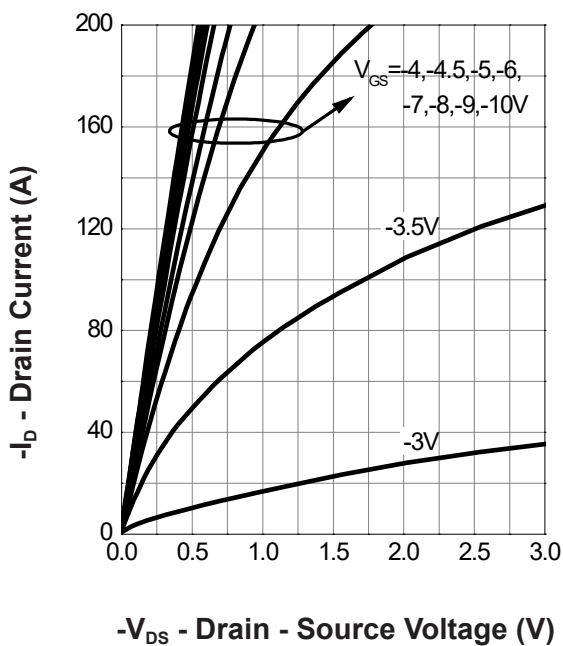
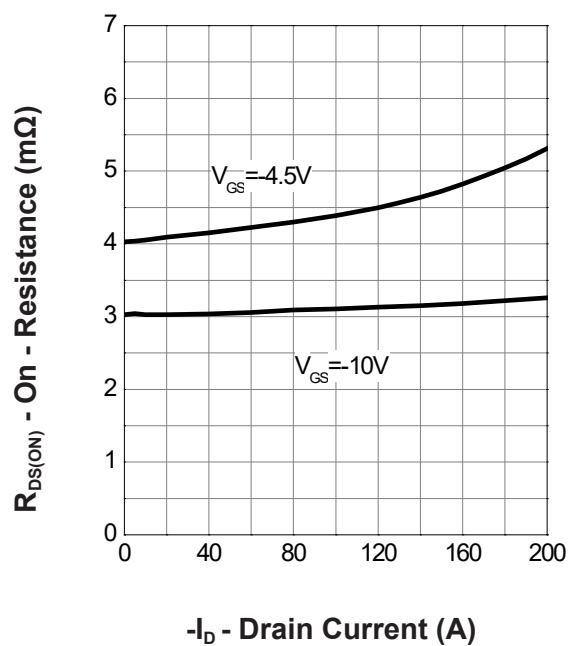
Drain Current

 T_c - Case Temperature ($^{\circ}\text{C}$)

Safe Operation Area

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

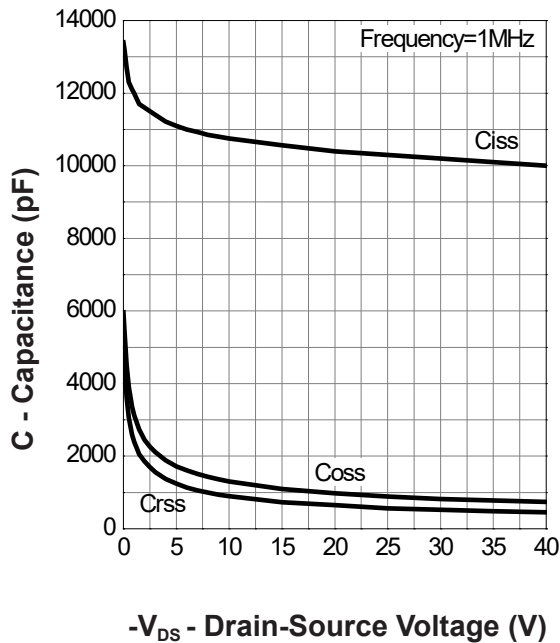
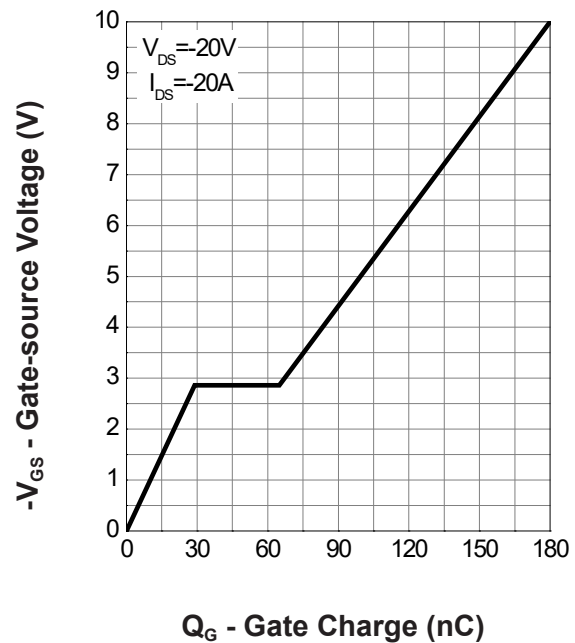
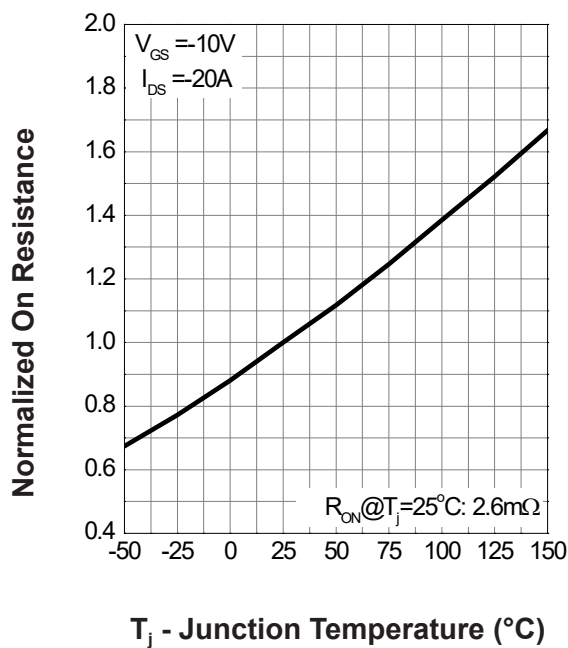
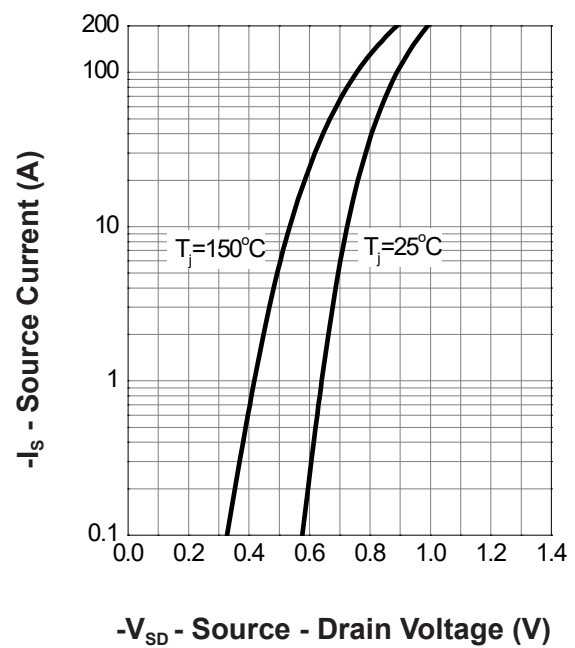
Thermal Transient Impedance


Square Wave Pulse Duration (sec)

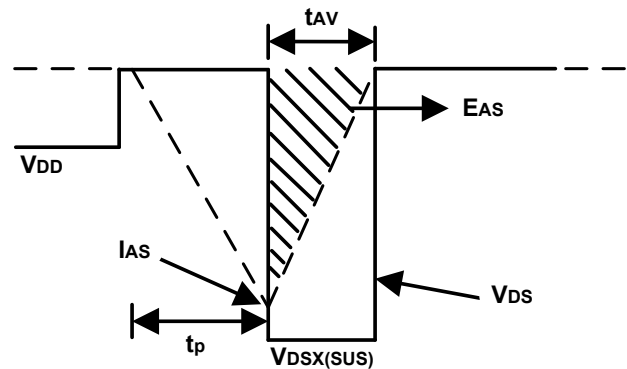
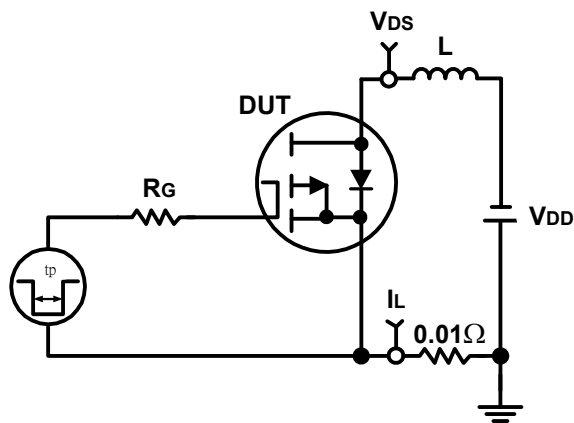
Typical Operating Characteristics(Cont.)

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

