P-Channel Enhancement Mode MOSFET

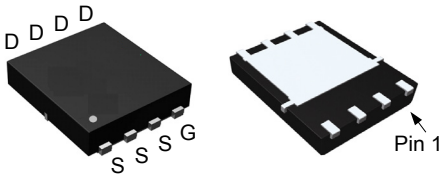
Features

- -30V/-100A
  $R_{DS(ON)}$=2.5mΩ(max.)@V_{GS}=-10V
  $R_{DS(ON)}$=3.5mΩ(max.)@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

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

Pin Description



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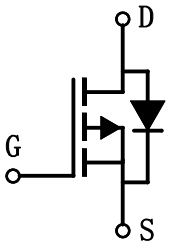


P-Channl Mosfet

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

Symbol	Parameter		Rating	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		-30	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	-44	A
I_D	Continuous Drain Current	T_C=25°C	-100	A
		T_C=100°C	-55	
I_{DM} [a]	Pulsed Drain Current	T_C=25°C	-300	
P_D	Maximum Power Dissipation	T_C=25°C	59.5	W
		T_C=100°C	23.8	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	Steady state	2.1	°C/W
I_D	Continuous Drain Current	T_A=25°C	-29.5	A
		T_A=70°C	-20.5	
P_D	Maximum Power Dissipation	T_A=25°C	3.08	W
		T_A=70°C	2.33	
$R_{\theta JA}$ [b]	Thermal Resistance-Junction to Ambient	Steady state	60	°C/W
I_{AS} [c]	Avalanche Current, Single pulse	L=0.1mH	-50	A
E_{AS} [c]	Avalanche Energy, Single pulse	L=0.1mH	125	mJ

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).

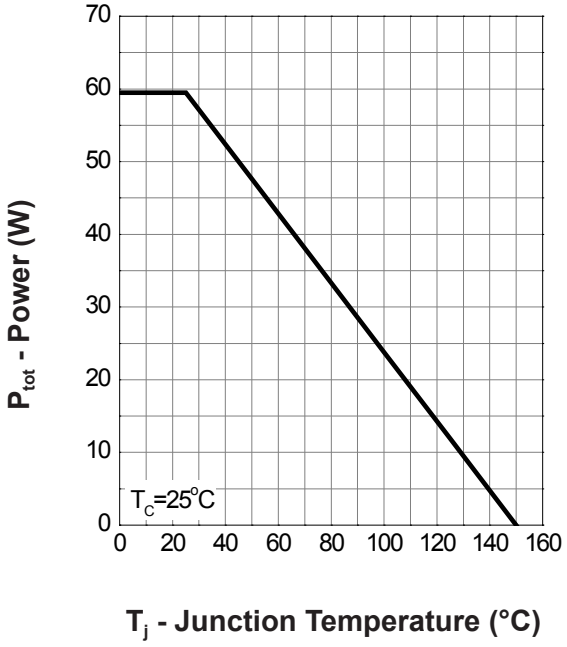
Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=-250μA	-30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-24V, V_{GS}=0V	-	-	-1	μA
		T_J=85°C	-	-	-30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250μA	-1.0	-1.5	-2.0	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}=-30A	-	2.5	3.0	mΩ
		V_{GS}=-4.5V, I_{DS}=-20A	-	3.5	4.5	
Diode Characteristics						
V_{SD} [d]	Diode Forward Voltage	I_{SD}=-1A, V_{GS}=0V	-	-0.7	-1	V
t_{rr}	Reverse Recovery Time	I_{SD}=-30A, dI_{SD}/dt=100A/μs	-	36	-	ns
Q_{rr}	Reverse Recovery Charge		-	23	-	nC
Dynamic Characteristics [e]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	2	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-15V, Frequency=1.0MHz	-	7125	7860	pF
C_{oss}	Output Capacitance		-	2812	-	
C_{rss}	Reverse Transfer Capacitance		-	575	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=-15V, R_L=15Ω, I_{DS}=-1A, V_{GEN}=-10V, R_G=6Ω	-	19	34	ns
t_r	Turn-on Rise Time		-	16	29	
$t_{d(OFF)}$	Turn-off Delay Time		-	115	207	
t_f	Turn-off Fall Time		-	71	128	
Gate Charge Characteristics [e]						
Q_g	Total Gate Charge	V_{DS}=-15V, V_{GS}=-4.5V, I_{DS}=-30A	-	39	-	nC
Q_g	Total Gate Charge	V_{DS}=-15V, V_{GS}=-10V, I_{DS}=-30A	-	80	112	
Q_{gs}	Gate-Source Charge		-	14	-	
Q_{gd}	Gate-Drain Charge		-	19	-	

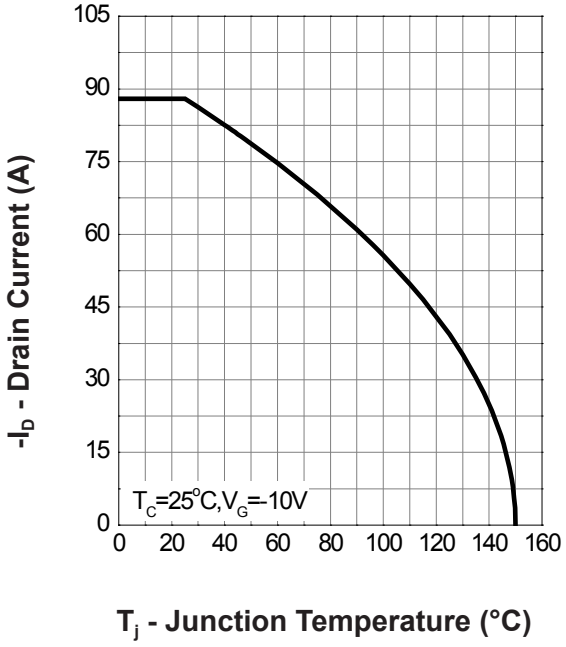
Note d：Pulse test ; pulse width≤300μs, duty cycle≤2%.
Note e：Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

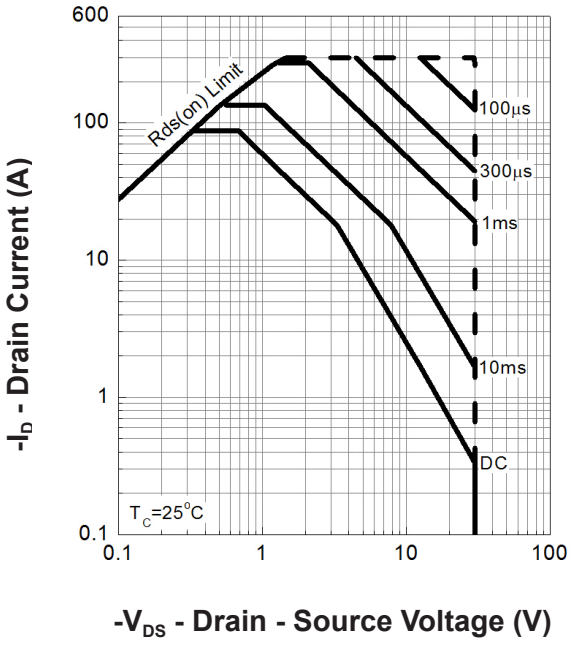
Power Dissipation



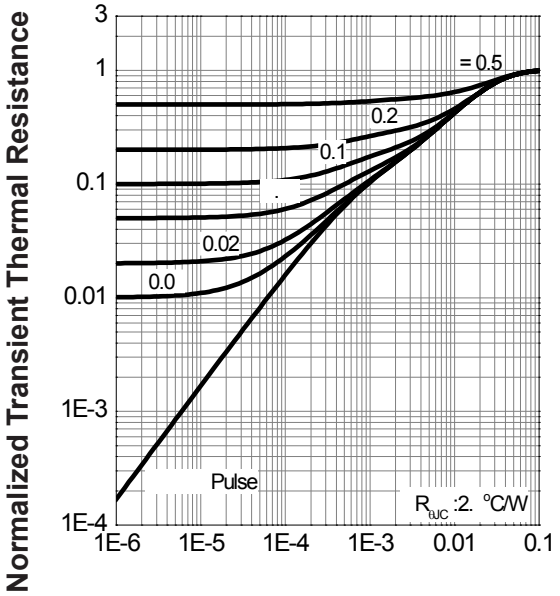
Drain Current



Safe Operation Area

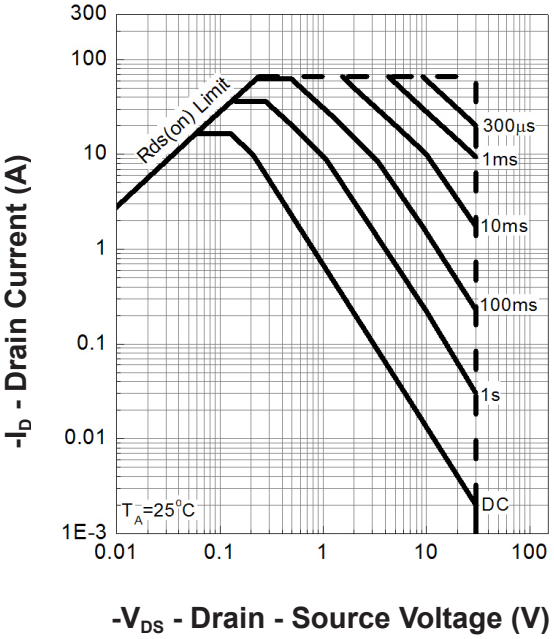


Thermal Transient Impedance

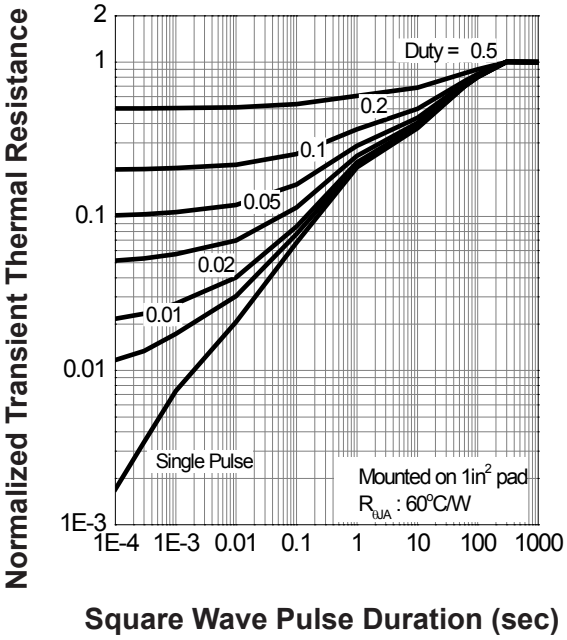


Typical Operating Characteristics(Cont.)

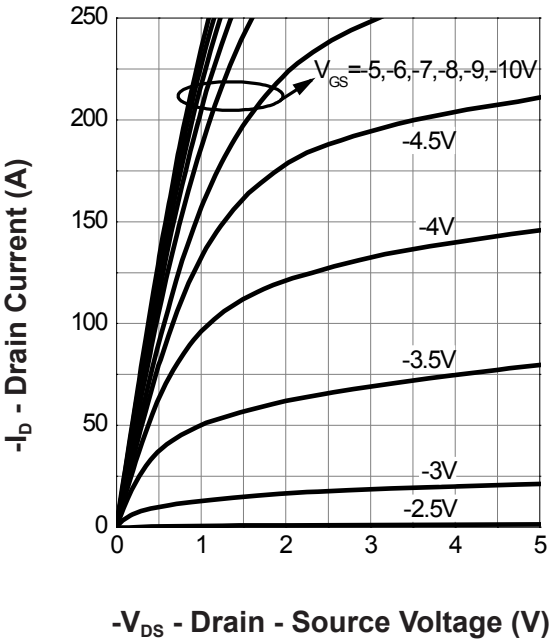
Safe Operation Area



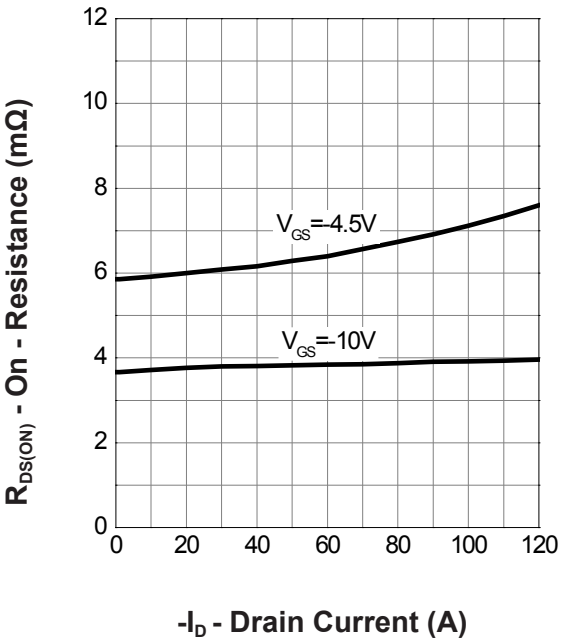
Thermal Transient Impedance



Output Characteristics

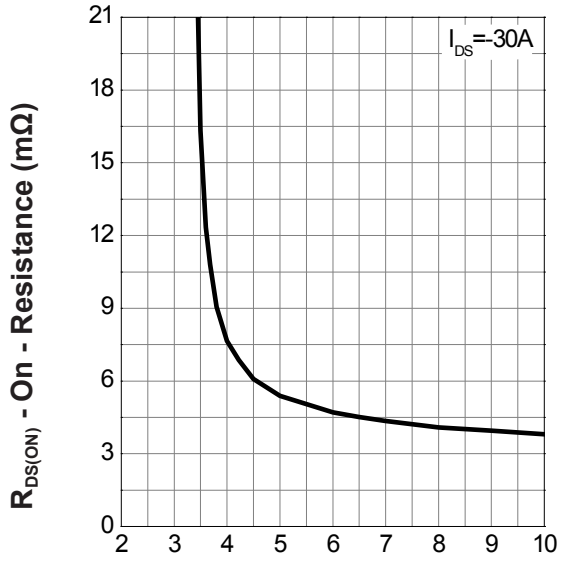


Drain-Source On Resistance



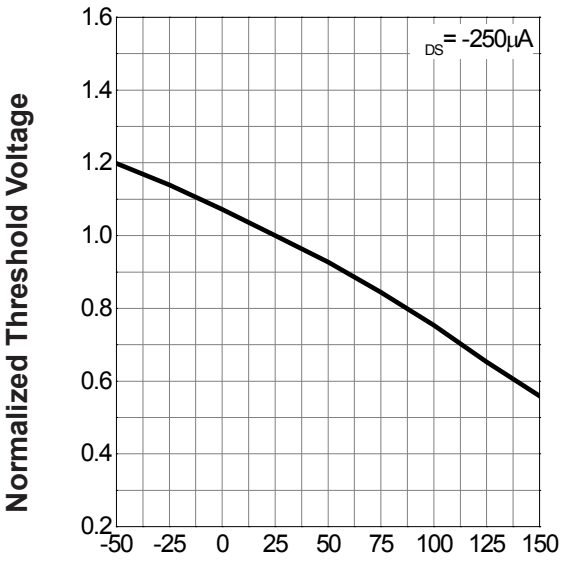
Typical Operating Characteristics(Cont.)

Gate-Source On Resistance



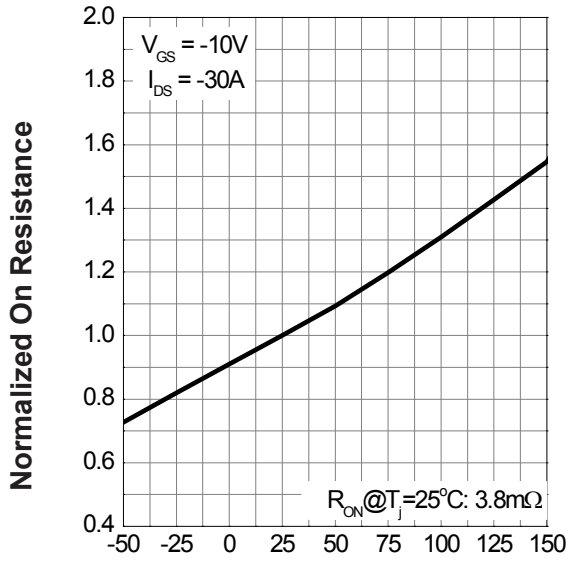
$-V_{GS}$ - Gate - Source Voltage (V)

Gate Threshold Voltage



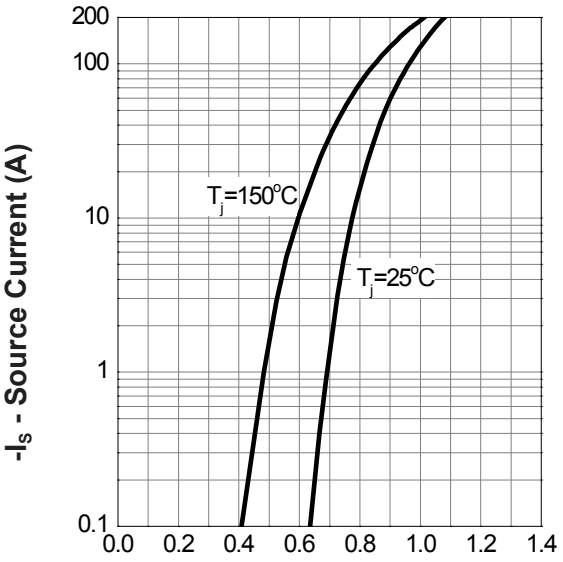
T_j - Junction Temperature (°C)

Drain-Source On Resistance



T_j - Junction Temperature (°C)

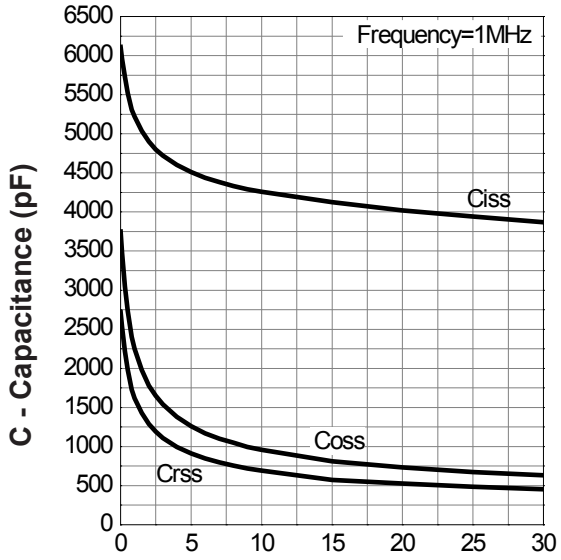
Source-Drain Diode Forward



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

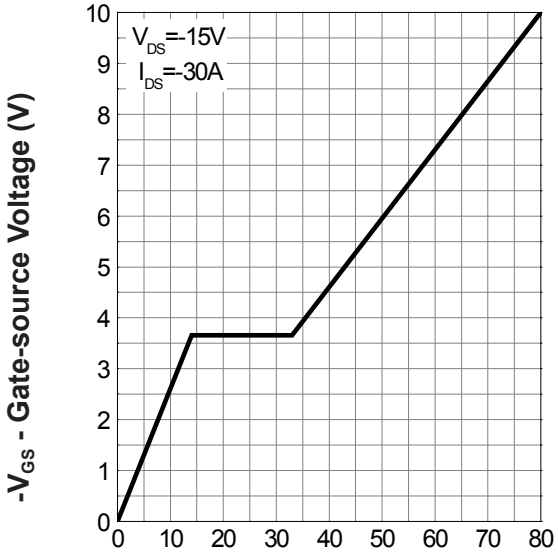
Typical Operating Characteristics(Cont.)

Capacitance



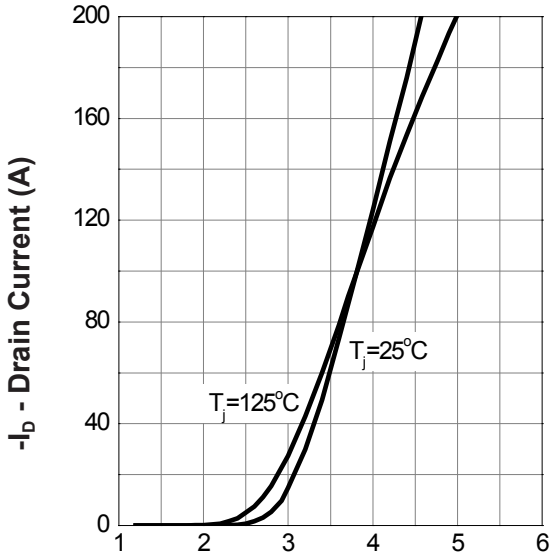
$-V_{DS}$ - Drain-Source Voltage (V)

Gate Charge



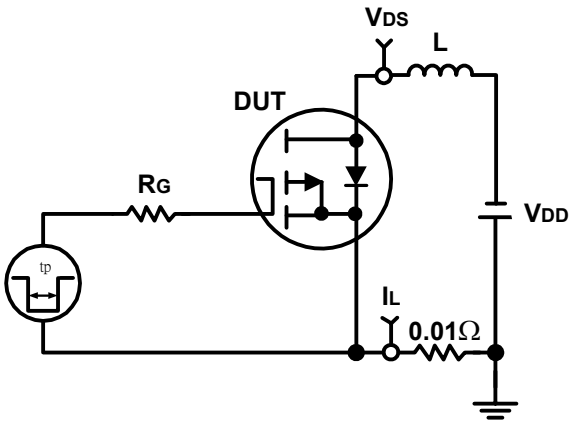
Q_G - Gate Charge (nC)

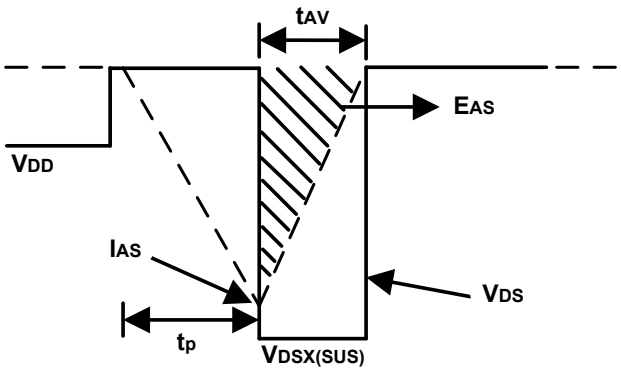
Transfer Characteristics



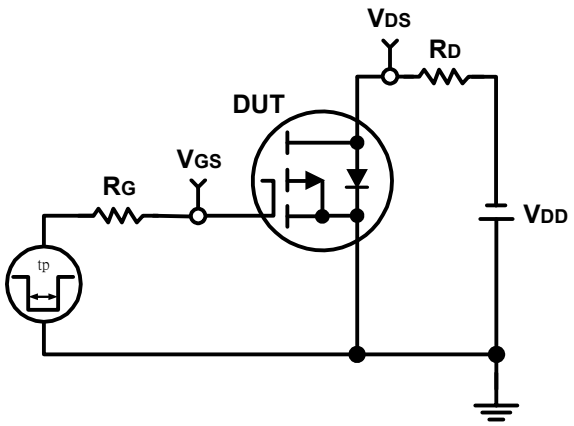
$-V_{GS}$ - Gate-Source Voltage (V)

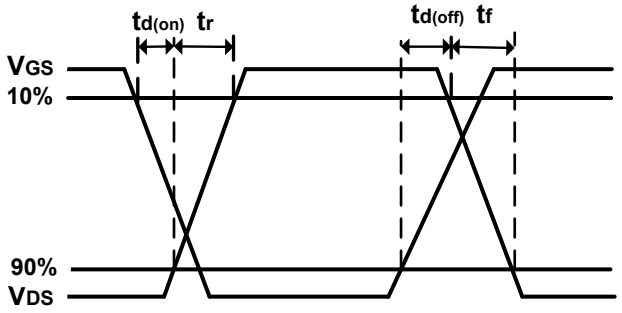
Avalanche Test Circuit and Waveforms



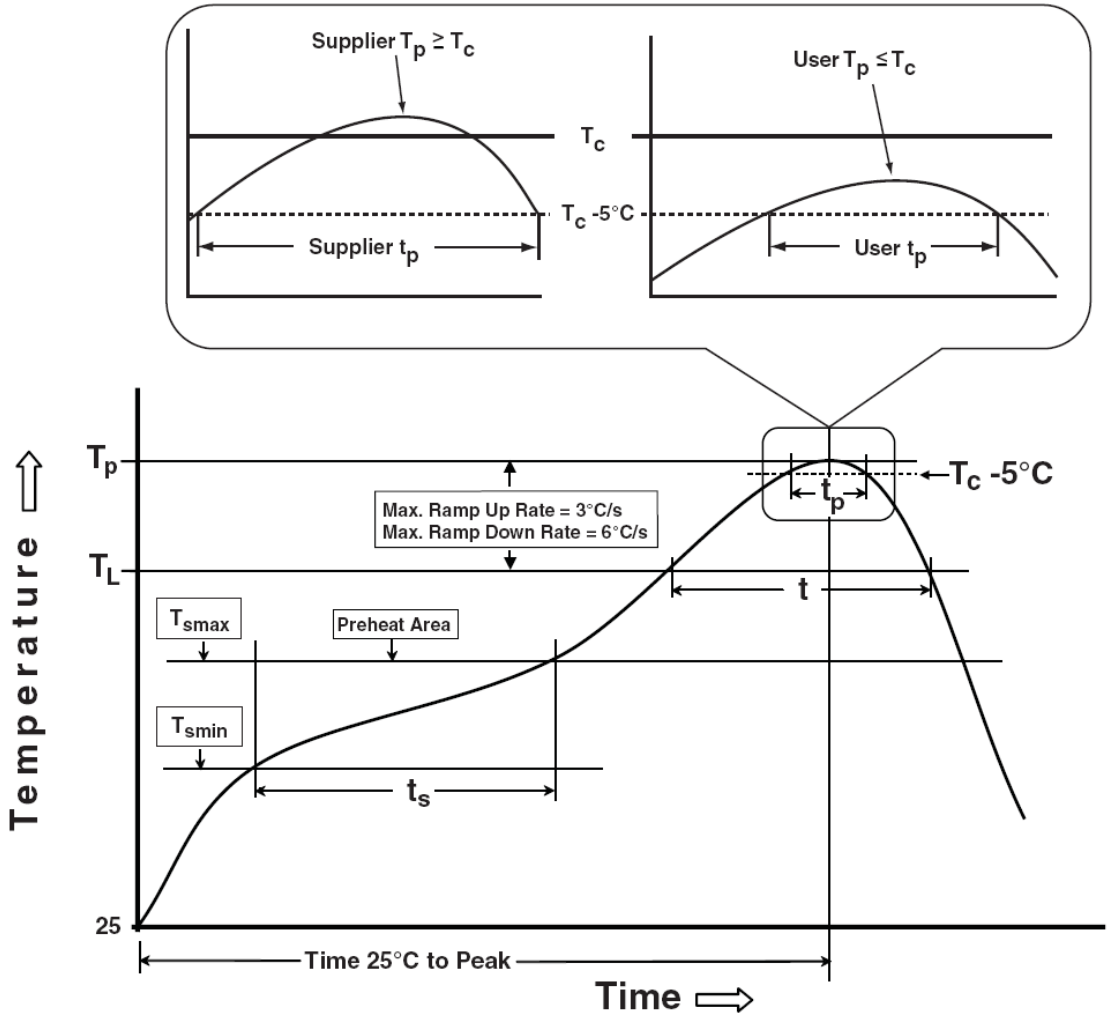


Switching Time Test Circuit and Waveforms





Classification Profile



PDFN5×6_8L_EP1_P OUTLINE