-20V/-55A P-Channel Power MOSFET

Features

- V_{DS} = -20V, I_D = -55 A
- Low $R_{DS(ON)}$
  $R_{DS(ON)}$ = 7.4mΩ (max) @ V_{GS}=-4.5V
- 100% avalanche tested
- Fast switching and fully avalanche rated
- Expetional dv/dt capacility
- Lead free and Green Device Available

Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Portable Instrumentation
- Load switch

P-Channel MOSFET

PDFN3333-8L
SLT075P02N2S

Absolute Maximum Ratings

Symbol	Parameter	Max.	Units
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	±12	V
I_D @ T_C = 25°C	Continuous Drain Current, V_{GS} @ 4.5V	-55	A
I_D @ T_C = 100°C	Continuous Drain Current, V_{GS} @ 4.5V	-35	
I_{DM}	Pulsed Drain Current ①	-220	
P_D @T_C = 25°C	Power Dissipation	46	W
P_D @T_C = 100°C	Power Dissipation	18	W
E_{AS}	Single Pulse Avalanche Energy ②	57	mJ
T_J	Maximum Junction Temperature	150	°C
T_{STG}	Storage Temperature Range	-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Max.	Units
$R_{\theta JC}$	Maximum Junction-to-Case	2.7	°C/W
$R_{\theta JA}$	Maximum Junction-to-Ambient	60	°C/W

Ordering Information

Part Number	Package Tupe	Standard Park		Reel Size
		Form	Quantity	
SLT075P02N2S	PDFN3333-8L	Tape and Reel	5000	13 inch

Electrical Characteristics @ TJ = 25°C (unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
V_{DSS}	Drain-to-Source Breakdown Voltage	-20	——	——	V	VGS = 0V, ID = -250 μA
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance ③	——	5.7	7.4	mΩ	VGS =-4.5V, ID = -15 A
		——	7.7	10	mΩ	VGS =-2.5V, ID = -10 A
$V_{GS(th)}$	Gate Threshold Voltage	-0.35	-0.60	-1.1	V	VDS = VGS, ID = -250 μA
I_{DSS}	Drain-to-Source Leakage Current	——	——	-1	μA	VDS = -20 V, VGS = 0V
		——	——	-30		TJ = 85°C
I_{GSS}	Gate-to-Source Forward Leakage	——	——	±100	nA	VGS= ±12 V, VDS = 0 V

Dynamic Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
Qg	Total Gate Charge	——	52	——	nC	ID = -10 A, VDS = -16 V, VGS = -4.5V
Qgs	Gate-to-Source Charge	——	12	——		
Qgd	Gate-to-Drain ("Miller") Charge	——	9	——		
td(on)	Turn-On Delay Time	——	12	——	ns	VDS = -10 V, ID = -10 A, RG = 3Ω, VGS = -4.5 V
tr	Rise Time	——	120	——		
td(off)	Turn-Off Delay Time	——	98	——		
tf	Fall Time	——	140	——		
Ciss	Input Capacitance	——	3510	——	pF	VGS = 0 V, VDS = -10 V, *f* = 1.0 MHz
Coss	Output Capacitance	——	508	——		
Crss	Reverse Transfer Capacitance	——	430	——		

Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	——	——	-55	A	
V_{SD}	Diode Forward Voltage	——	-0.75	-1.2	V	Isd = -55 A, VGS = 0 V

Notes:
①Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
②Starting T_J = 25°C,V_{DD}=-10V,V_G=-10V, L = 0.5mH, R_G = 25Ω, I_{AS}=-19.5A.
③Pulse width ≤ 300μs; duty cycle≤ 2%.

Typical Operating Characteristics

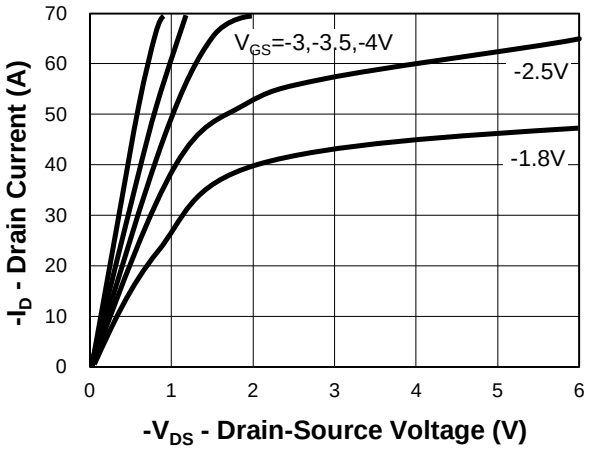


Fig 1. Output Characteristics

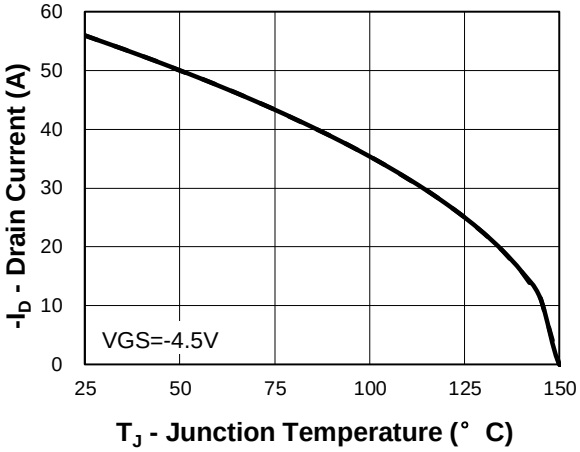


Fig 2. Drain Current

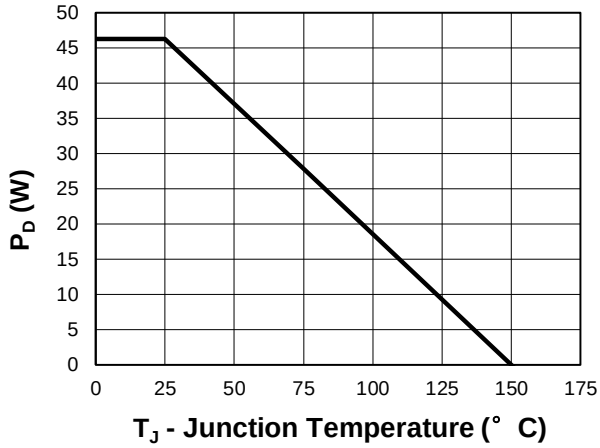


Fig 3. Power Dissipation

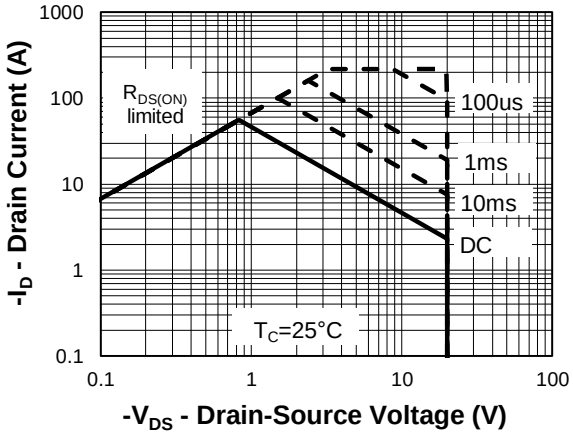


Fig 4. Safe Operation Area(SOA)

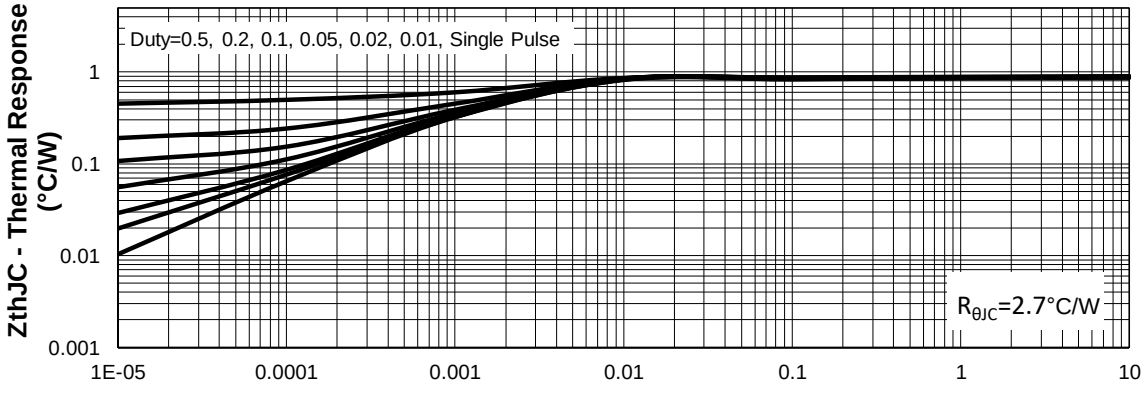


Fig 5. Thermal Transient Impedance

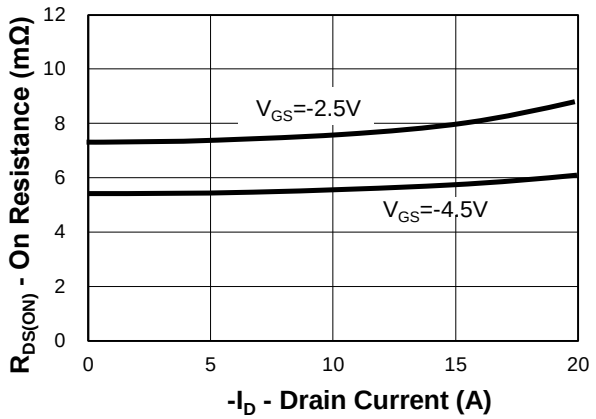


Fig 6. Rdson vs. Drain Current Characteristics

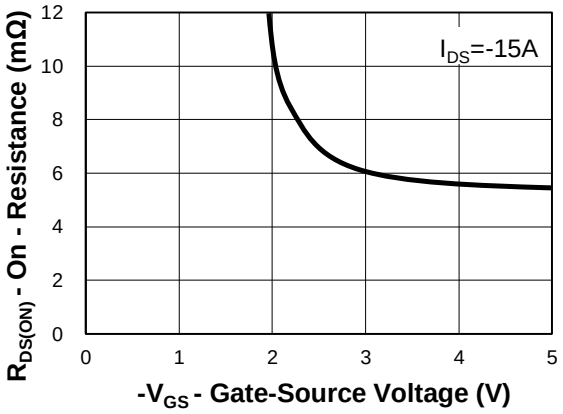


Fig 7. Gate-Source on Resistance

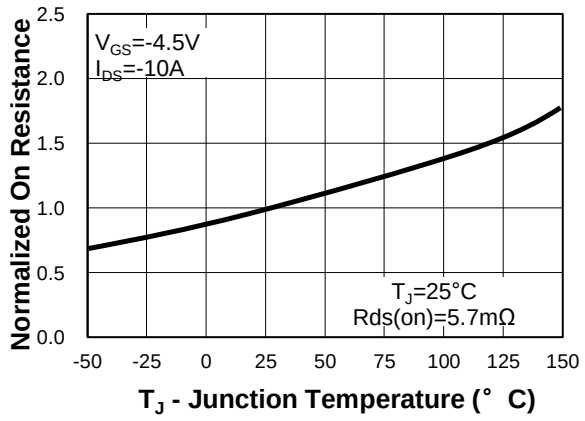


Fig 8. Rdson vs. Junction Tem Characteristics

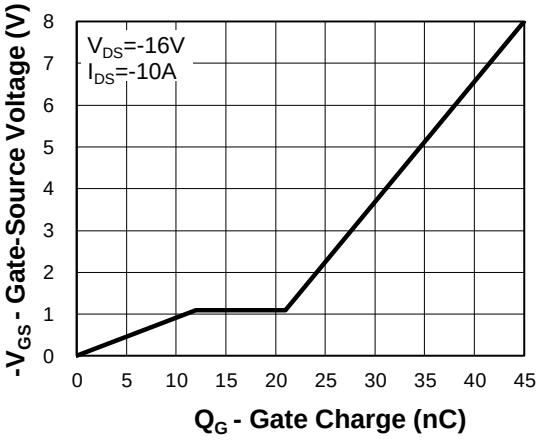


Fig 9. Gate Charge Characteristics

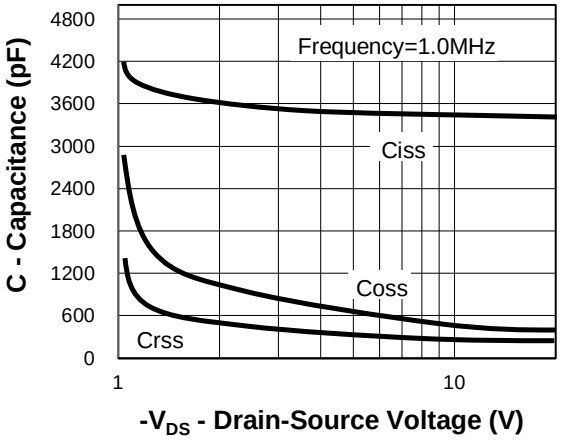


Fig 10. Capacitance Characteristics

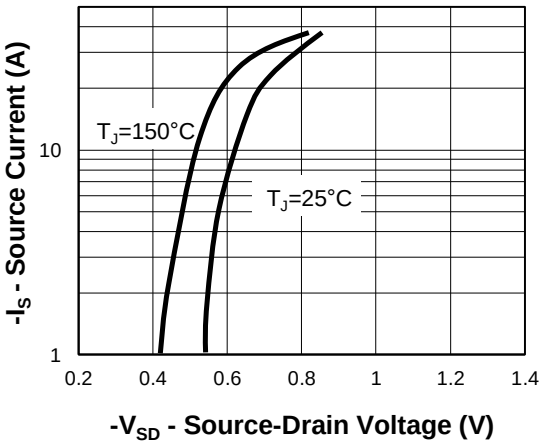
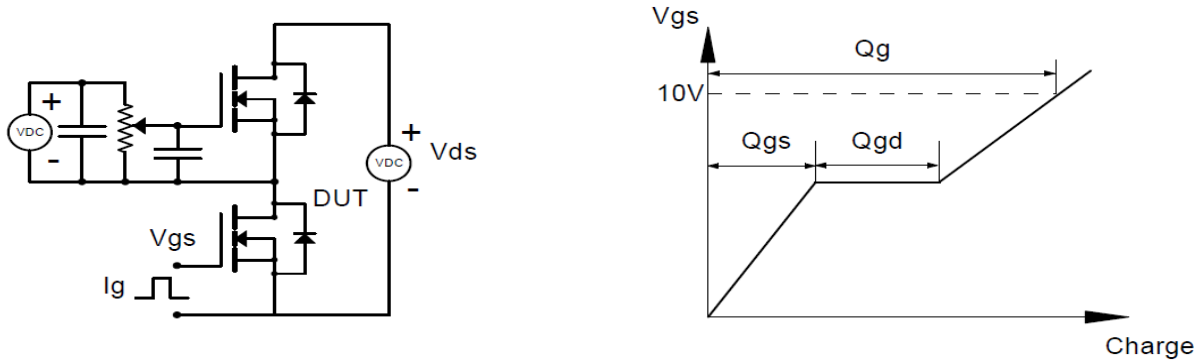
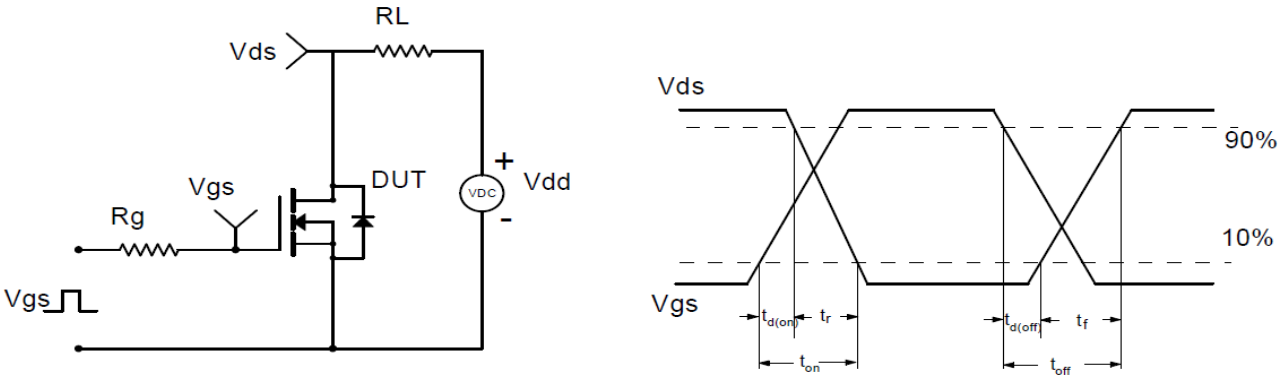


Fig 11. Source-Drain Diode Forward

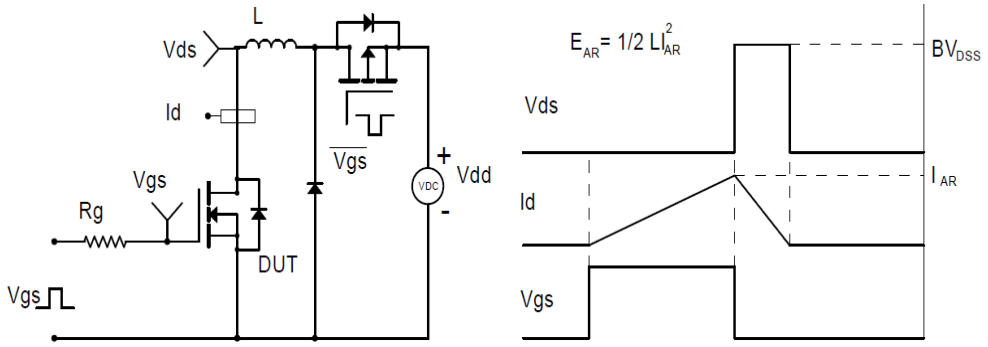
Test Circuit & Waveform



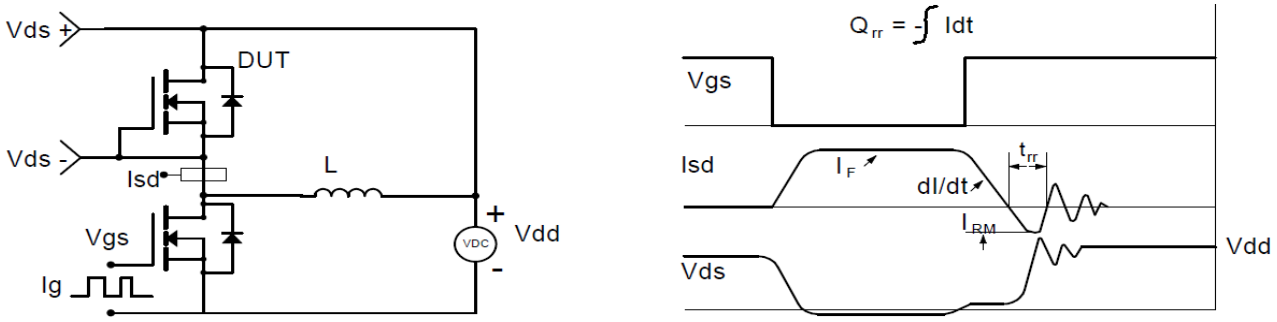
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



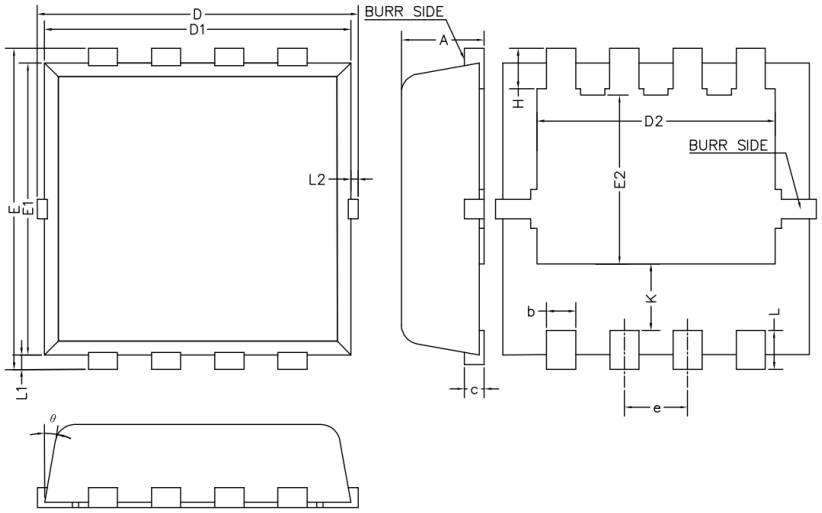
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

Product dimension

PDFN3333-8L



DIM	UNITS（mm）		
	MIN.	TYP.	MAX.
A	0.70	0.80	0.90
b	0.25	0.30	0.35
c	0.14	0.15	0.20
D	3.10	3.30	3.35
D1	3.05	3.15	3.25
D2	2.35	2.45	2.55
e	0.55	0.65	0.75
E	3.10	3.30	3.50
E1	2.90	3.00	3.10
E2	1.64	1.74	1.84
H	0.32	0.42	0.52
K	0.59	0.69	0.79
L	0.25	0.40	0.55
L1	0.10	0.15	0.20
L2	—	—	0.15
θ	8°	10°	12°