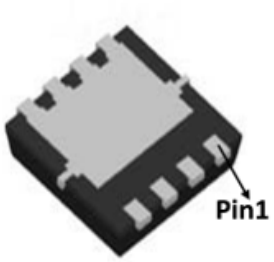
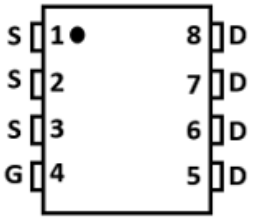
P-Channel Enhancement Mode Field Effect Transistor

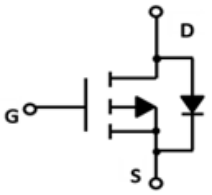
Product Summary

- V_{DS} -20V
- I_D -55A
- $R_{DS(ON)}$(at V_{GS}=-4.5V) ＜8.3mohm
- $R_{DS(ON)}$(at V_{GS}=-2.5V) ＜10 mohm
- $R_{DS(ON)}$(at V_{GS}=-1.8V) ＜15 mohm
- 100% UIS Tested
- 100% ▽V_{DS} Tested





DFN3.3X3.3



General Description

- Trench Power LV MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

Applications

- High current load applications
- Load switching
- Hard switched and high frequency circuits
- Uninterruptible power supply

■ Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	-20	V
Gate-source Voltage		V_{GS}	±10	V
Drain Current	T_A=25℃	I_D	55	A
	T_A=100℃		35	
Pulsed Drain Current [A]		I_{DM}	160	A
Single Pulse Avalanche Energy [B]		E_{AS}	75	mJ
Total Power Dissipation	T_C=25℃	P_D	38	W
	T_A=25℃		3.2	
Thermal Resistance Junction-to-Case		$R_{\theta JC}$	3.3	℃/ W
		$R_{\theta JA}$	39	
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	℃

Electrical Characteristics (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=250μA	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-20V,V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±10V, V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=-250μA	-0.4	-0.62	-1.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= -4.5V, I_D=-15A		6.5	8.3	mΩ
		V_{GS}= -2.5V, I_D=-10A		8.0	10.0	
		V_{GS}= -1.8V, I_D=-8.0A		10.3	15	
Diode Forward Voltage	V_{SD}	I_S=-20A,V_{GS}=0V		-0.7	-1.2	V
Maximum Body-Diode Continuous Current	I_S				-55	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=-10V,V_{GS}=0V,f=1MHZ		3150		pF
Output Capacitance	C_{oss}			625		
Reverse Transfer Capacitance	C_{rss}			555		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=-4.5V,V_{DS}=-10V,I_D=-20A		45		nC
Gate-Source Charge	Q_{gs}			8.1		
Gate-Drain Charge	Q_{gd}			11.5		
Reverse Recovery Charge	Q_{rr}	I_F=-12A, di/dt=100A/us		26		
Reverse Recovery Time	t_{rr}			29		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=-4.5V,V_{DD}=-10V, I_D=-12A,R_L=1Ω R_{GEN}=3Ω		15		
Turn-on Rise Time	t_r			21		
Turn-off Delay Time	$t_{D(off)}$			96		
Turn-off fall Time	t_f			166		

A. Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.

B. T_j=25℃, V_{DD}=20V, V_G=10V, L=0.5mH, R_g=25Ω

Typical Performance Characteristics

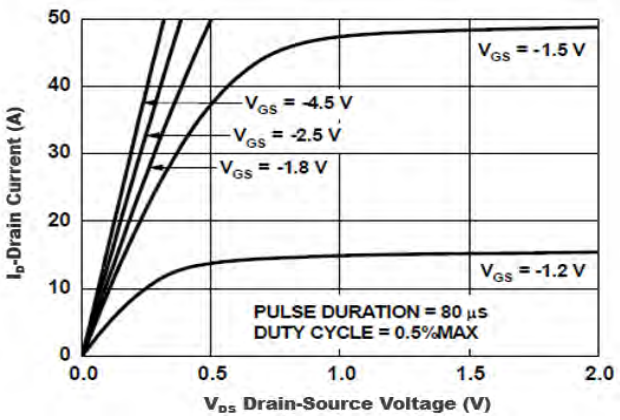


Figure1. Output Characteristics

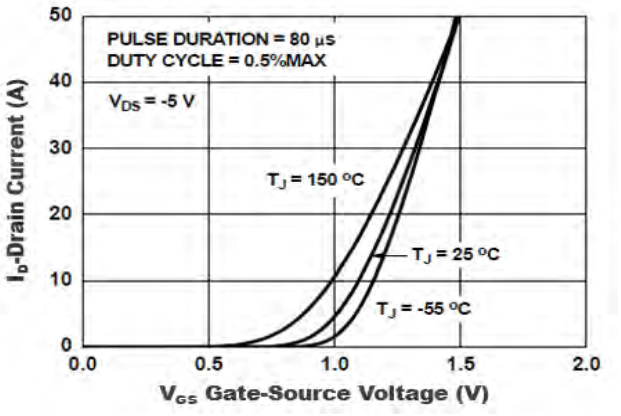


Figure2. Transfer Characteristics

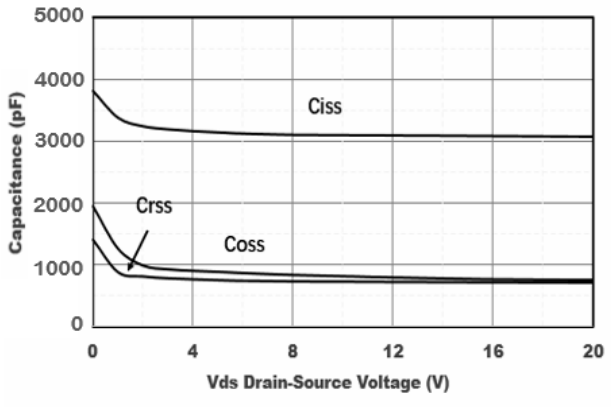


Figure3. Capacitance Characteristics

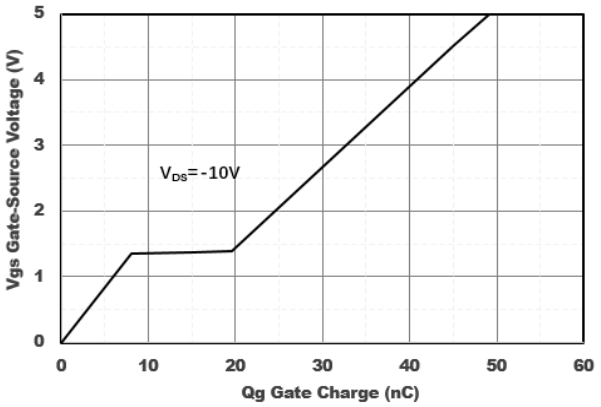


Figure4. Gate Charge

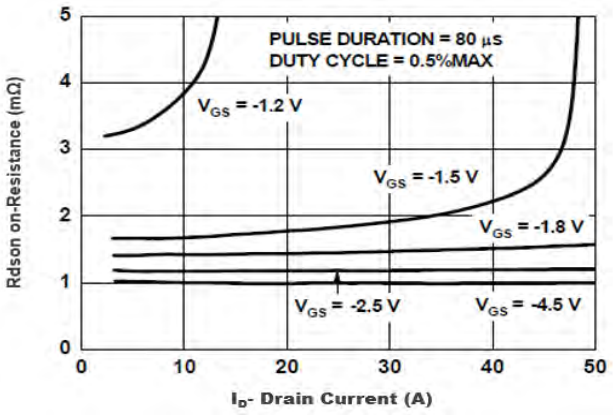


Figure5. Drain-Source on Resistance

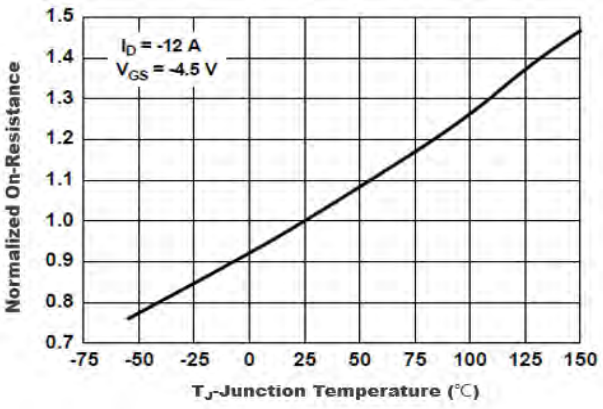


Figure6. Drain-Source on Resistance

Typical Performance Characteristics(con.)

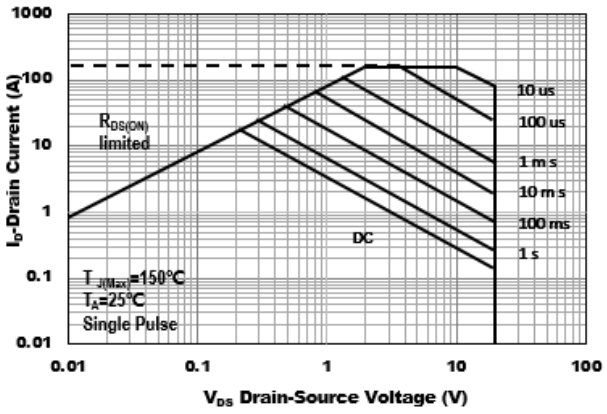


Figure7. Safe Operation Area

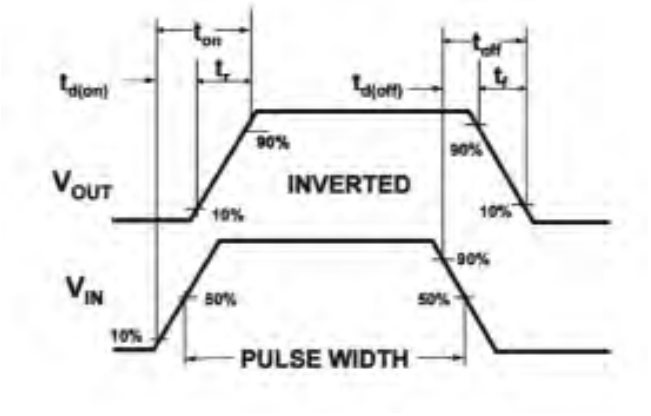
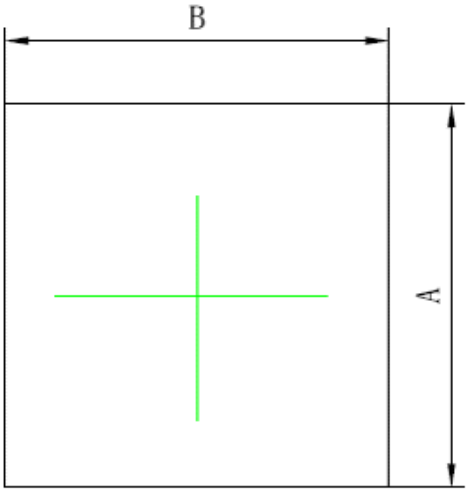
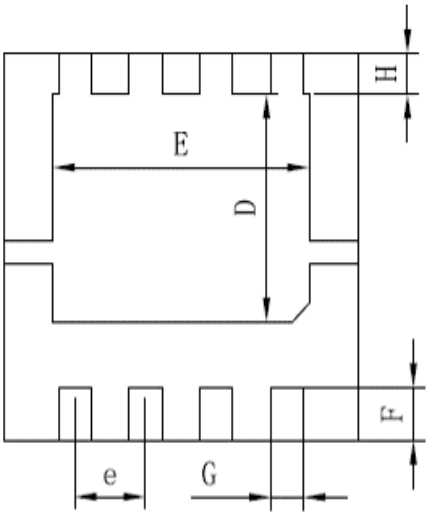


Figure8. Switching wave

DFN3.3X3.3 Package information





A	B	C	C1
3.25±0.05	3.25±0.05	0.8±0.05	0.2±0.02
C2	D	E	F
0.05Max	1.9±0.1	2.35±0.15	0.45±0.05
G	H	e	
0.3±0.05	0.35±0.05	0.65±0.05	
单位：mm