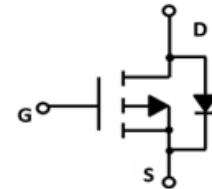
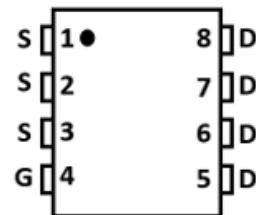
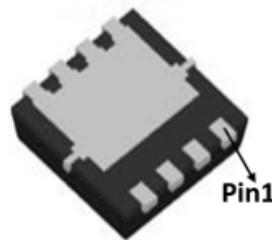


P-Channel Enhancement Mode Field Effect Transistor

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

Marking : Q55P02

Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

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

Electrical Characteristics (T_j=25°C 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		ns
Reverse Recovery Time	t _{rr}			29		
Turn-on Delay Time	t _{D(on)}			15		
Turn-on Rise Time	t _r	V _{GS} =-4.5V, V _{DD} =-10V, I _D =-12A, R _L =1Ω R _{GEN} =3Ω		21		ns
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°C, V_{DD}=20V, V_G=10V, L=0.5mH, R_g=25Ω

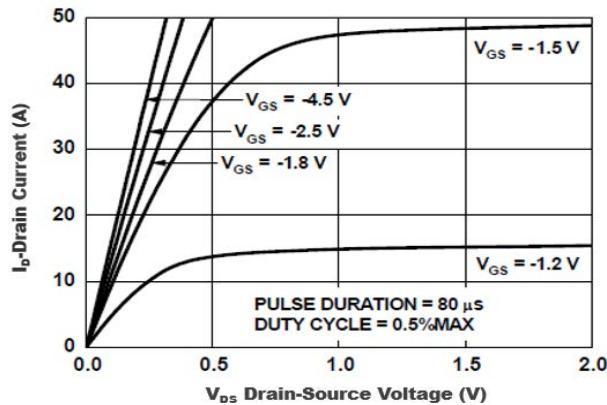
Typical Performance Characteristics


Figure1. Output Characteristics

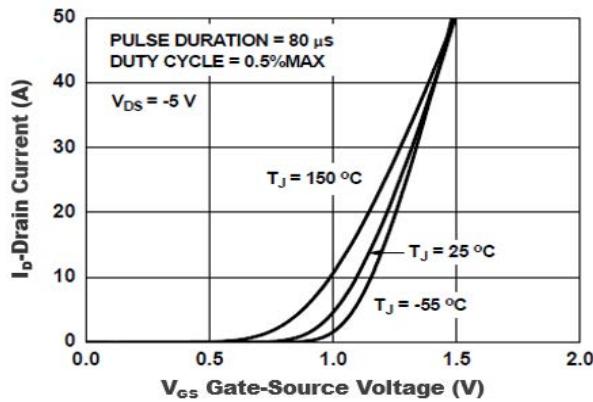


Figure2. Transfer Characteristics

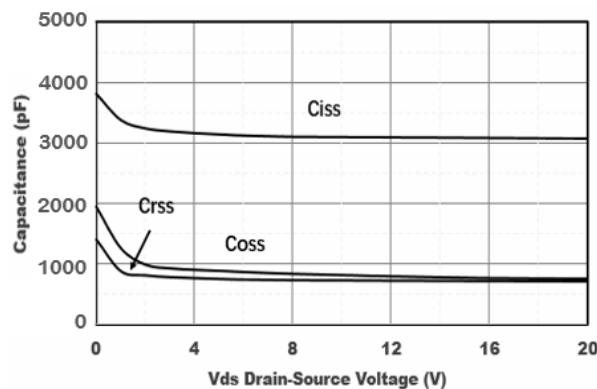


Figure3. Capacitance Characteristics

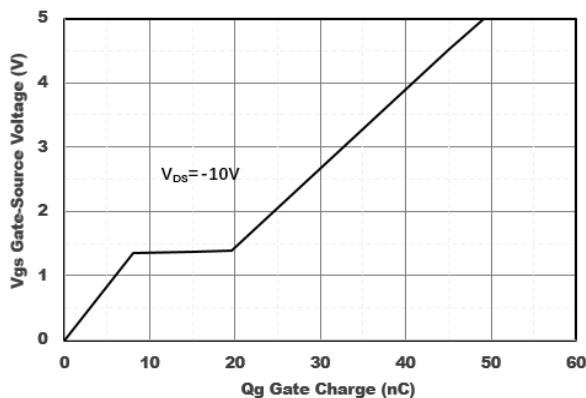


Figure4. Gate Charge

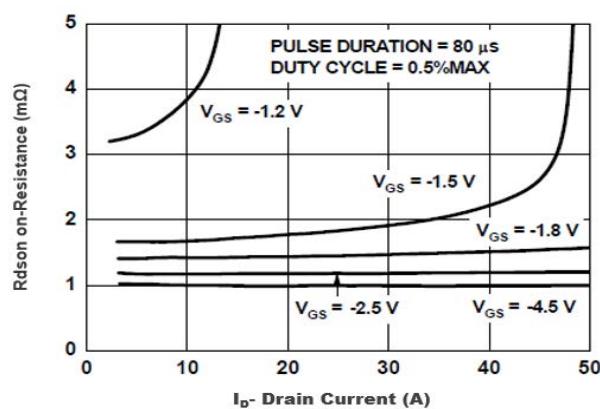


Figure5. Drain-Source on Resistance

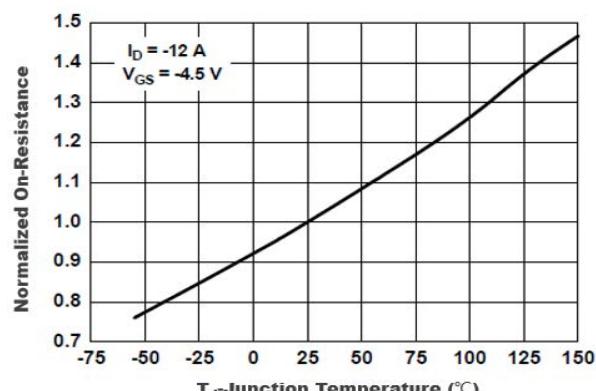


Figure6. Drain-Source on Resistance

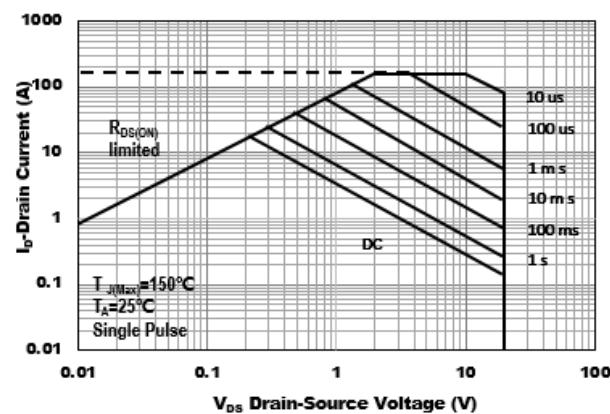


Figure7. Safe Operation Area

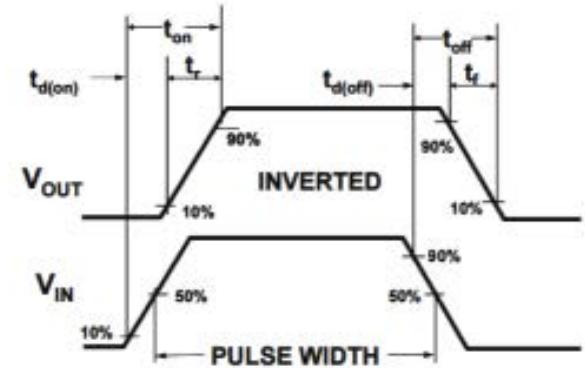
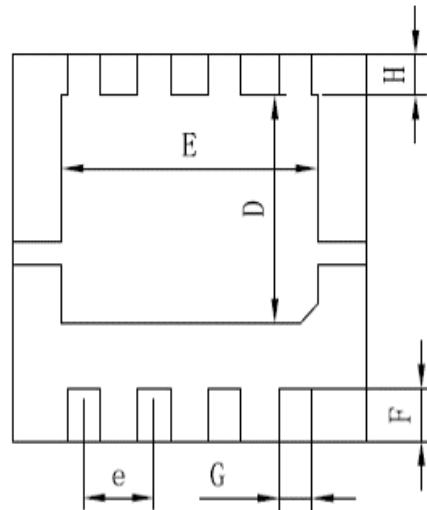
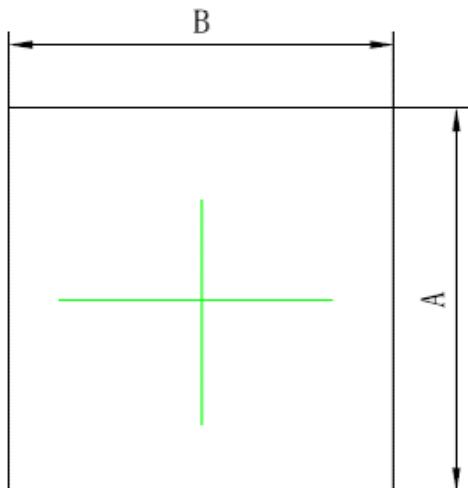


Figure8. Switching wave

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	
: mm			

