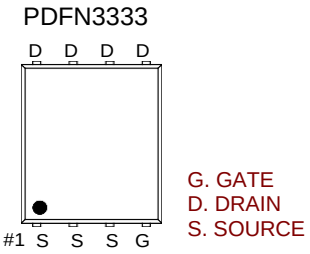
P -Channel High Density Trench MOSFET

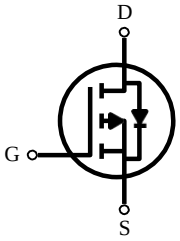
Features:

- Super high dense cell trench design for low RDS(on).
- Rugged and reliable.
- Surface Mount package.



PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(on)}$ (mΩ) Max	I_D
-30V	14 @ V_{GS} = -10V	-38A
	18 @ V_{GS} = -4.5V	



ABSOLUTE MAXIMUM RATINGS (TA = 25 ℃ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±25	V
Drain Current-Continuous	TA=25℃	I_D	-38	A
	TA=70℃		-26	
Pulsed Drain Current (Note 1)		I_{DM}	-120	
Avalanche Current		I_{AS}	-30	
Single Pulse Avalanche Energy	L = 0.1mH	E_{AS}	68	mJ
Maximum Power Dissipation (Note 1)	TA=25℃	P_D	4.1	W
	TA=70℃		2.6	
Operating Junction and Storage Temperature Range		T_J,T_{STG}	- 55 to 150	℃

TYPICAL THERMAL CHARACTERISTICS (Note 1)

Thermal Resistance,Junction-to-Case	R_{thJC}	2.5	℃/W
Thermal Resistance Junction-Ambient	R_{thJA}	62.5	℃/W

Note：

1. Pule width limited by maximum junction temperature.

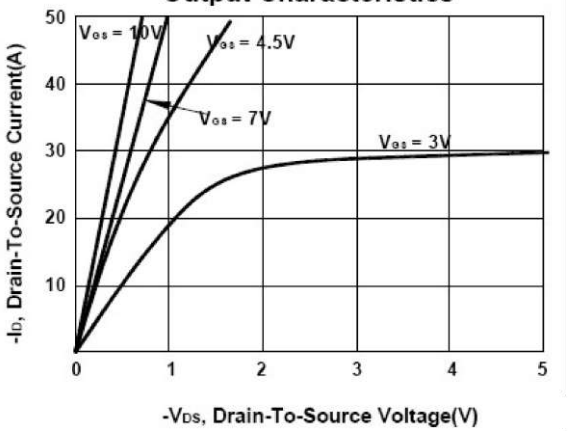
ELECTRICAL CHARACTERISTICS (TA = 25 ℃ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V , I_D = -250uA	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -24V , V_{GS} = 0V, Tj = 25℃			-1	uA
		V_{DS} = -20V , V_{GS} = 0V , Tj = 125℃			-30	
Gate-Body Leakage	I_{GSS}	V_{GS} = ±20V , V_{DS} = 0V			±100	nA
ON CHARACTERISTICS (Note 2)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = VGS , I_D = 250uA	-1	-1.4	-2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = -10V , I_D = -12A		10.5	14	mΩ
		V_{GS} = -4.5V , I_D = -9A		14	18	mΩ
Forward Transconductance	gfs	V_{DS} = -10V , I_D = -12A		14.8		S
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	V_{DS} = -15V , V_{GS} = 0V f = 1.0MHz		2157		pF
Output Capacitance	C_{OSS}			235		pF
Reverse Transfer Capacitance	C_{RSS}			206		pF
Gate Resisance	Rg	V_{DS} = 0V , V_{GS} = 0V , f = 1.0MHz		9		Ω
SWITCHING CHARACTERISTICS (Note 3)						
Turn-On Delay Time	$td_{(ON)}$	V_{DD} = -15V , I_D = -1A , V_{GS} = -10V R_{GS}= 6 Ω		10.6		nS
Rise Time	tr			15.6		nS
Turn-Off Delay Time	$td_{(OFF)}$			90		nS
Fall Time	tf			31.2		nS
Total Gate Charge (10V)	Qg	V_{DS} = 0.5BVDSS , I_D = -12A V_{GS} = -10V		46		nC
Total Gate Charge (4.5V)	Qg			23		nC
Gate-Source Charge	Qgs			6.5		nC
Gate-Drain Charge	Qgd			8.8		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Continuous Current	I_S				-2.3	A
Diode Forward Voltage (Note 2)	V_{SD}	V_{GS} = 0V , I_S = I_F		-0.75	-1.1	V

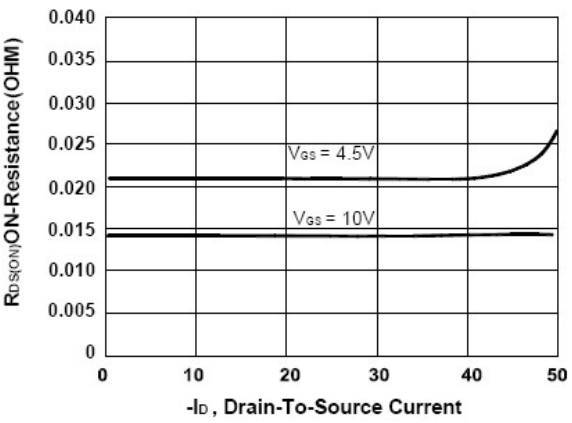
Note：

2. Pulse Test Pulse width≤300usec , Duty Cycle≤2%
3. Independent of operating production testing .

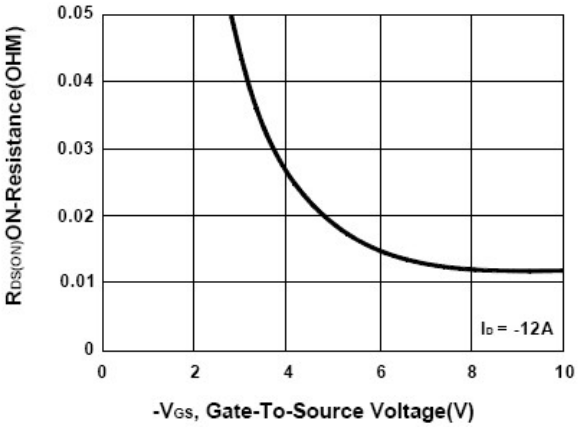
Output Characteristics



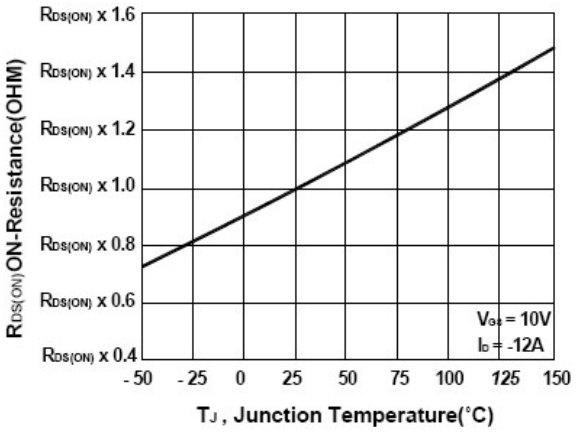
On-Resistance VS Drain Current



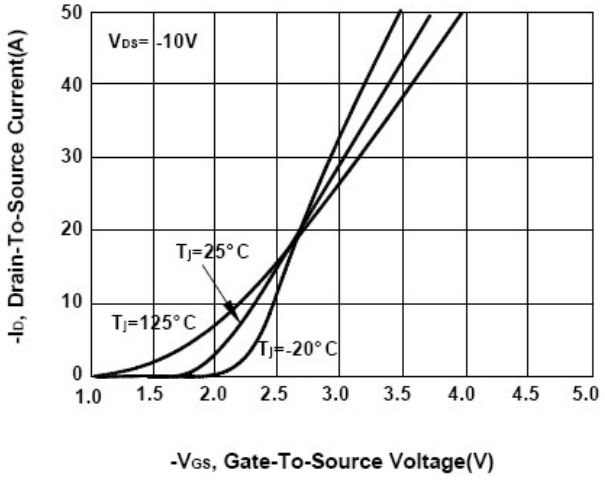
On-Resistance VS Gate-To-Source



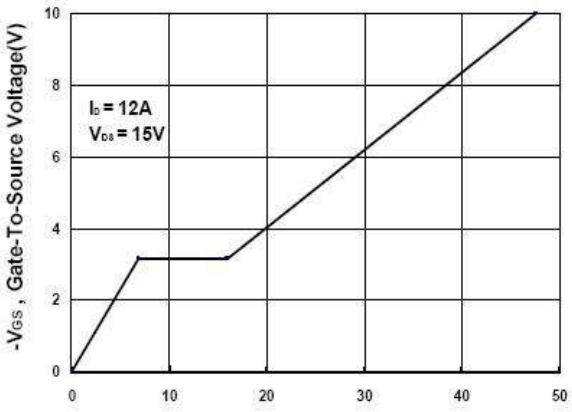
On-Resistance VS Temperature



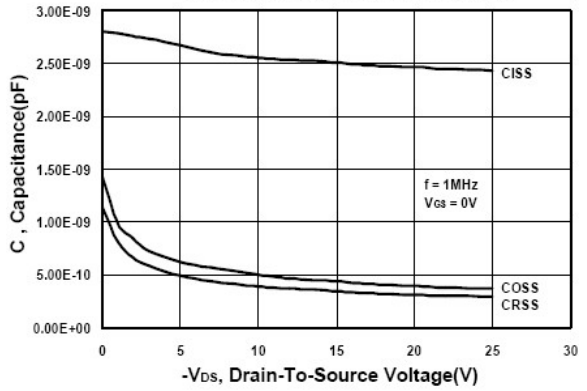
Transfer Characteristics



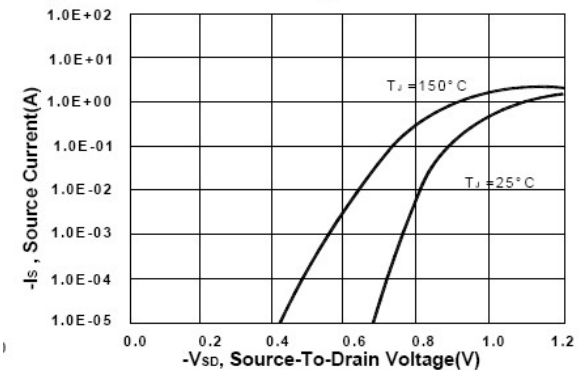
Gate charge Characteristics



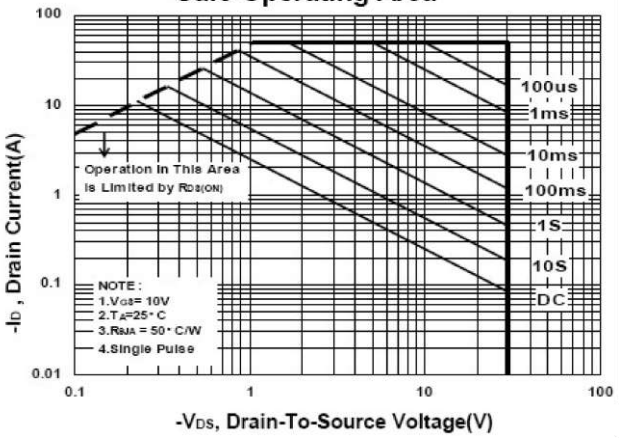
Capacitance Characteristic



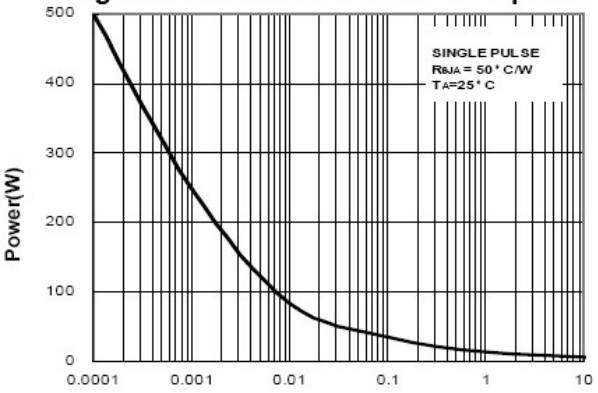
Body Diode Forward Voltage VS Source current



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve