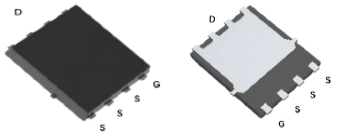
30V N-channel Power MOSFET

DESCRIPTION：
- Low on resistance
- Low gate charge
- Fast switching
- Low reverse transfer capacitances
- 100% single pulse avalanche energy test
- 100% ΔVDS test

TYPICAL APPLICATIONS：
- Power switching applications
- Electric tools
- Inverter management system

V_{DSS}	30V
I_D (Tc=25℃)	160A
$R_{DS(ON)_Typ.}$ @V_{GS}=10V	1.5mΩ



PDFN5×6-8L

MAXIMUM RATINGS (at T_C = 25 °C, unless otherwise specified)

Characteristic	Condition	Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	Tc=25℃ Tc=100℃	I_D	160 112	A
Pulsed Drain Current (1)		I_{DM}	630	A
Single Pulsed Avalanche Energy (2)		E_{AS}	440	mJ
Avalanche Current		I_{AS}	42	A
Power dissipation	Tc=25℃	P_D	220	W
Junction & Storage temperature Range		T_J, T_{STG}	-55~+150	℃

Notes： 1. Repetitive rating, pulse width limited by maximum junction temperature.
2. EAS condition : L=0.5mH,ID=42A,VDD=24V,VGATE=30V,Start TJ=25℃.

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction to Case	$R_{\theta JC}$	0.68	℃/W

ELECTRICAL CHARATERISTICS (at T_J = 25 °C, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage VGS = 0V, ID = 250uA	$V_{(BR)DSS}$	30			V
Zero Gate Voltage Drain Current VDS = 100V, VGS = 0 V	I_{DSS}			1.0	uA
Gate-Source Leakage Current VGS = ±20V, VDS = 0V	I_{GSS}			±100	nA
Gate-Source threshold voltage VDS = VGS, ID = 250uA	$V_{GS(th)}$	1.0	1.5	2.5	V
Drain-Source On-State Resistance VGS = 10V, ID = 90A VGS = 4.5V, ID = 50A	$R_{DS(on)}$		1.5 2.5	1.8 4.6	mΩ
Diode Forward Voltage VGS = 0V, I_S =50A	V_{SD}			1.3	V
Maximum Continuous Body Diode Forward Current	I_S			160	A
Gate Resistance VDD=0V,VGS=1V,f=1MHz	R_g		2.65		Ω
Input capacitance f=1MHz, VDS=15V, VGS=0 V	C_{iss}		5297		pF
Output capacitance f=1MHz, VDS=15V, VGS=0 V	C_{oss}		787		pF
Reverse transfer capacitance f=1MHz, VDS=15V, VGS=0 V	C_{rss}		517		pF
Total Gate Charge ID=90A,VDD=20V,VGS=10V	Q_G		125		nC
Gate to Source Charge ID=90A,VDD=20V,VGS=10V	Q_{GS}		22		nC
Gate to Drain Charge ID=90A,VDD=20V,VGS=10V	Q_{GD}		37		nC
Turn-on delay time ID=90A,VDD=20V,VGS=4.5V,R_{GEN}=2Ω	$t_{d\ (ON)}$		23		ns
Rise time ID=90A,VDD=20V,VGS=4.5V,RGEN=2Ω	tr		120		ns
Turn-off delay time ID=90A,VDD=20V,VGS=4.5V,RGEN=2Ω	$t_{d\ (OFF)}$		67		ns
Fall time ID=90A,VDD=20V,VGS=4.5V,RGEN=2Ω	tf		128		ns
Revers Recovery Time IF=30A,dI_F/dt=100A/us,VGS=0V	Trr		45		ns
Revers Recovery Charge IF=30A, dI_F/dt=100A/us,VGS=0V	Qrr		27.5		nC

Typical Performance Characteristics

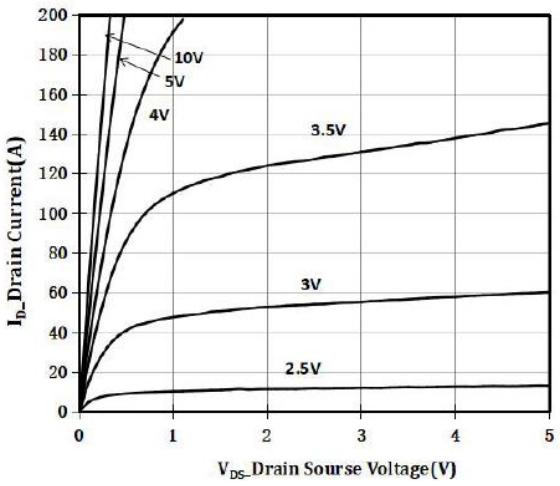


Figure 1. Output Characteristics

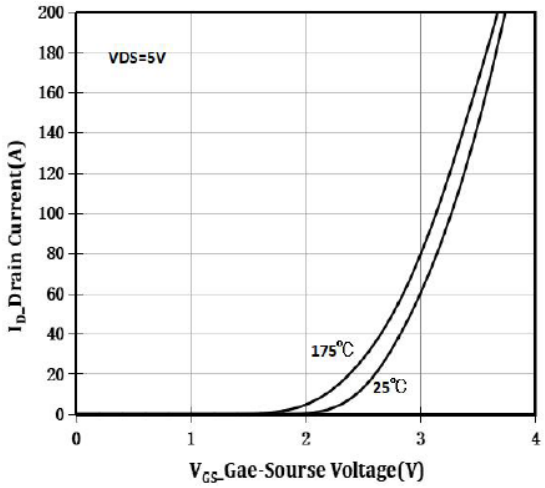


Figure 2. Transfer Characteristics

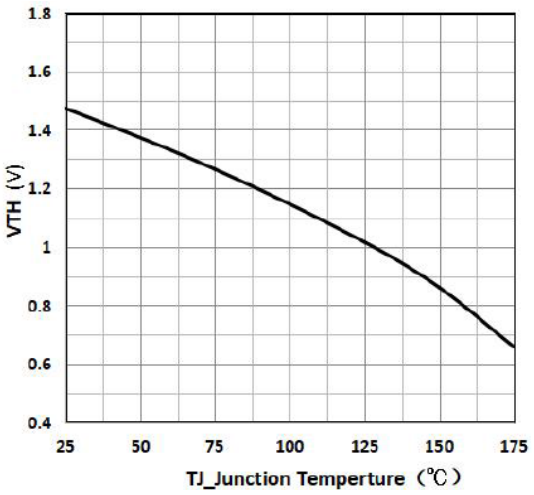


Figure 3. Threshold vs Temperature

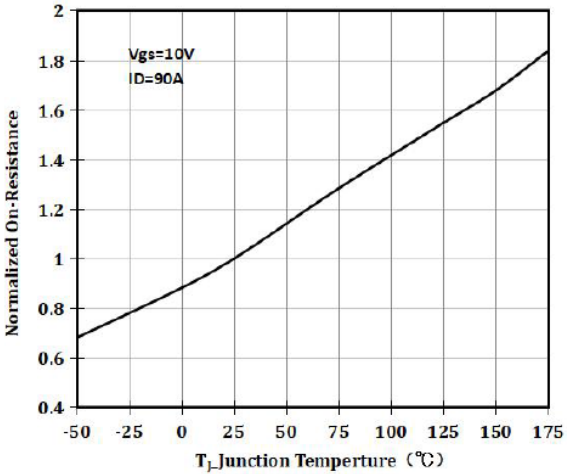


Figure4. $R_{DS(ON)}$ vs Junction Temperature

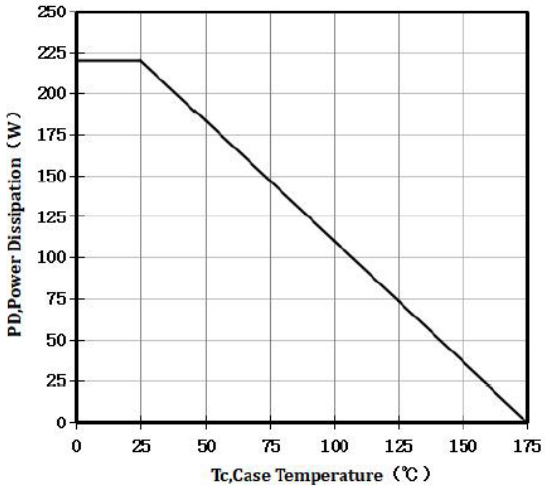


Figure 5. Power De-rating

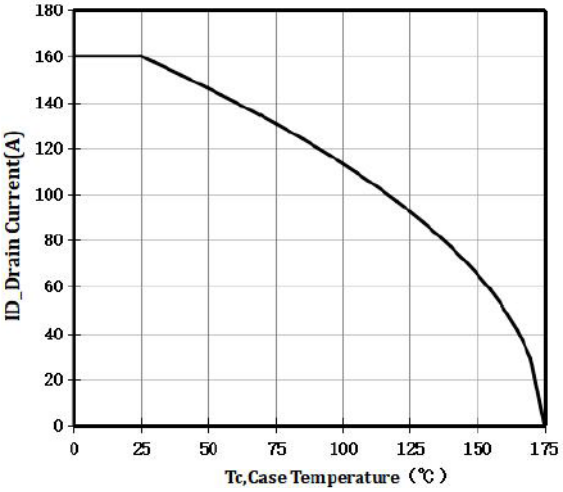


Figure 6. ID Current Derating

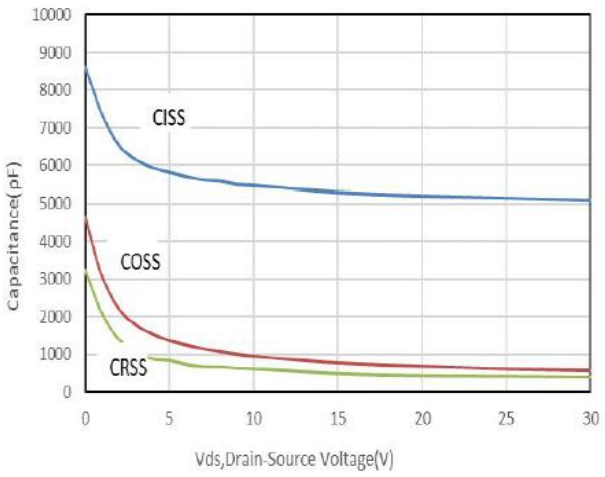


Figure 7. Capacitance Characteristics

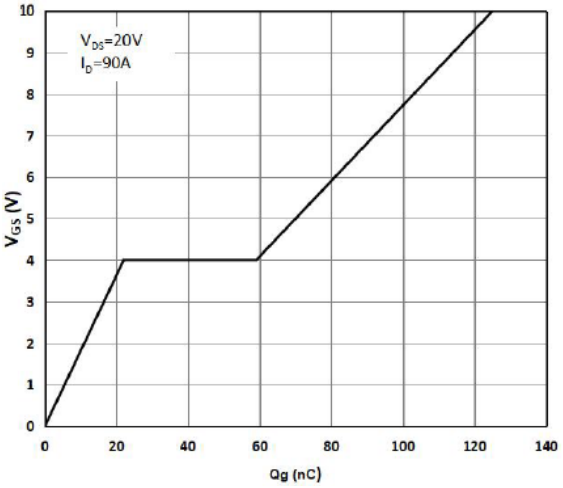


Figure8. Gate Charge Characteristics

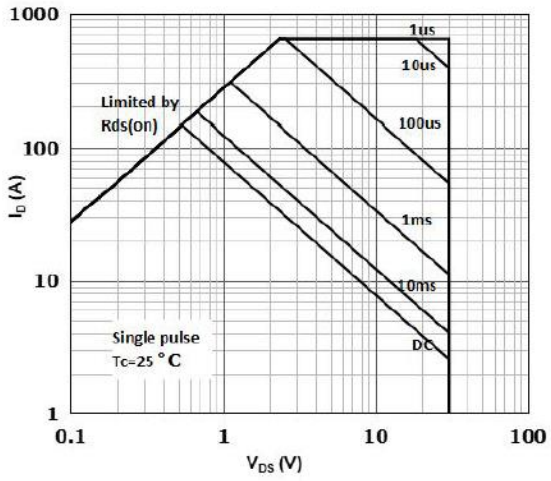


Figure 9. Safe Operating Area

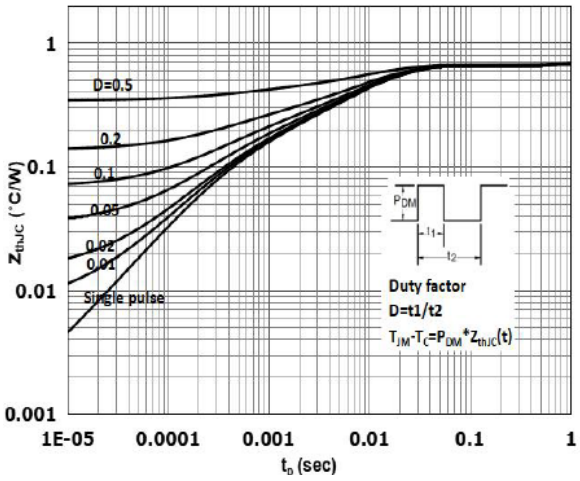
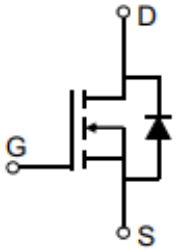
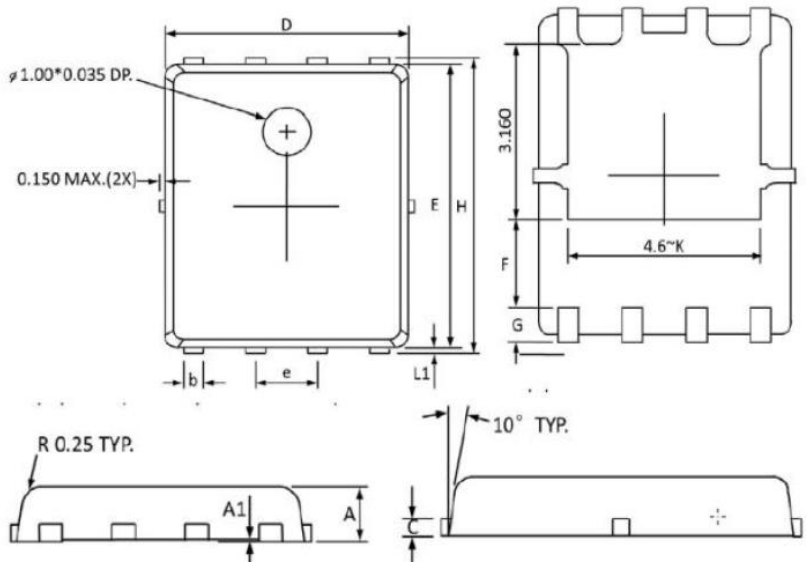


Figure 10. Transient Thermal Impedance

• Circuit diagram



• Package outlines : Dimensions in (mm)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.800	1.000	0.032	0.039
A1	0.000	0.005	0.000	0.000
b	0.350	0.490	0.014	0.019
C	0.254 Ref		0.254 Ref	
D	4.900	5.100	0.193	0.200
E	5.700	5.900	0.225	0.232
e	1.27 BSC		1.27 BSC	
F	1.600 Ref		1.600 Ref	
G	0.600 Ref		0.600 Ref	
H	5.950	6.200	0.235	0.244
L1	0.100	0.180	0.004	0.007
K	3.200 Ref		3.200 Ref	

Notice

MOSPEC reserves the rights to make changes of the content herein the document anytime without notification. MOSPEC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies. Please refer to MOSPEC website for the last document.

MOSPEC disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially incurred.

Application shown on the herein document are examples of standard use and operation. Customers are responsible for comprehending suitable use in particular applications. MOSPEC makes no representation or warranty that such application will be suitable for the specified use without further testing or modification.

The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by MOSPEC for any infringements of patents or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of MOSPEC or others.

These MOSPEC products are intended for usage in general electronic equipment. Please make sure to consult with MOSPEC before you use these MOSPEC products in equipment which require specialized quality and/or reliability, and in equipment which could have major impact to the welfare of human life (atomic energy control, aeronautics , traffic control, combustion control, safety devices etc.)