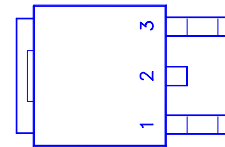
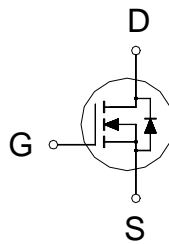


PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
25	20m	45A



1. GATE
2. DRAIN
3. SOURCE

ABSOLUTE MAXIMUM RATINGS ($T_C = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_C = 25\text{ }^\circ\text{C}$	I_D	45	A
	$T_C = 100\text{ }^\circ\text{C}$		28	
Pulsed Drain Current ¹		I_{DM}	140	
Avalanche Current		I_{AR}	20	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	140	mJ
Repetitive Avalanche Energy ²	$L = 0.05\text{mH}$	E_{AR}	5.6	
Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	P_D	55	W
	$T_C = 100\text{ }^\circ\text{C}$		33	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	$^\circ\text{C}$
Lead Temperature (¹ / ₁₆ " from case for 10 sec.)		T_L	275	

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		3	$^\circ\text{C} / \text{W}$
Junction-to-Ambient	$R_{\theta JA}$		70	
Case-to-Heatsink	$R_{\theta CS}$	0.7		

¹Pulse width limited by maximum junction temperature.

²Duty cycle $\leq 1\%$

ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$	25			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	0.8	1.2	2.5	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{V}, V_{GS} = \pm 20\text{V}$			± 250	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 20\text{V}, V_{GS} = 0\text{V}$			25	μA
		$V_{DS} = 20\text{V}, V_{GS} = 0\text{V}, T_J = 125\text{ }^\circ\text{C}$			250	
On-State Drain Current ¹	$I_{D(ON)}$	$V_{DS} = 10\text{V}, V_{GS} = 10\text{V}$	45			A

Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 7V, I_D = 18A$	20	30	m
		$V_{GS} = 10V, I_D = 20A$	15	28	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 15V, I_D = 30A$	16		S
DYNAMIC					
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$	600		pF
Output Capacitance	C_{oss}		290		
Reverse Transfer Capacitance	C_{rss}		100		
Total Gate Charge ²	Q_g	$V_{DS} = 0.5V_{(BR)DSS}, V_{GS} = 10V, I_D = 20A$	25		nC
Gate-Source Charge ²	Q_{gs}		2.9		
Gate-Drain Charge ²	Q_{gd}		7.0		
Turn-On Delay Time ²	$t_{d(on)}$	$V_{DS} = 15V, R_L = 1 \Omega, I_D \cong 30A, V_{GS} = 10V, R_{GS} = 2.5 \Omega$	7.0		nS
Rise Time ²	t_r		7.0		
Turn-Off Delay Time ²	$t_{d(off)}$		24		
Fall Time ²	t_f		6.0		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)					
Continuous Current	I_S			45	A
Pulsed Current ³	I_{SM}			150	
Forward Voltage ¹	V_{SD}	$I_F = I_S, V_{GS} = 0V$		1.3	V
Reverse Recovery Time	t_{rr}	$I_F = I_S, di_F/dt = 100A / \mu S$	37		nS
Peak Reverse Recovery Current	$I_{RM(REC)}$		200		A
Reverse Recovery Charge	Q_{rr}		0.043		μC

¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

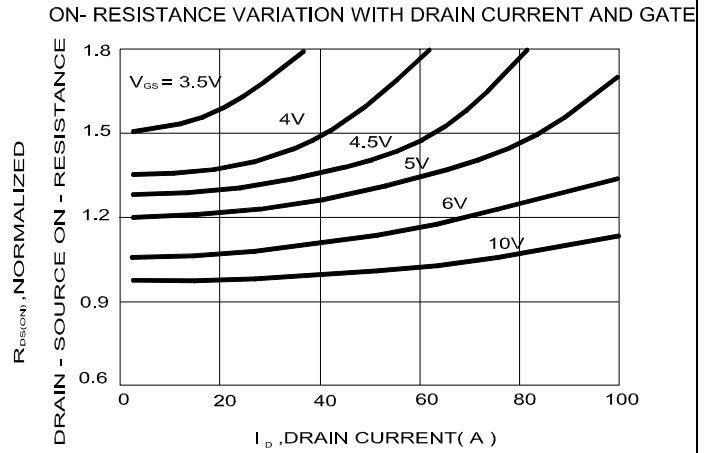
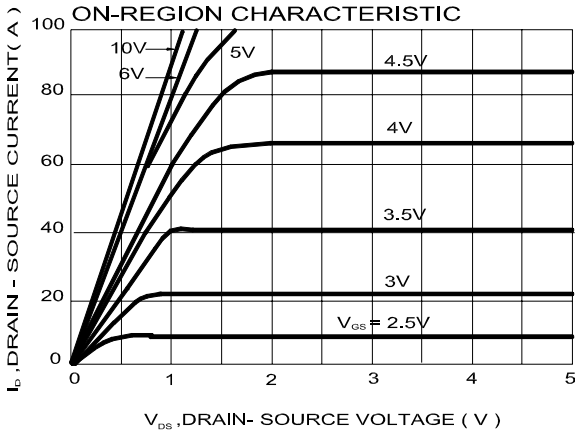
²Independent of operating temperature.

³Pulse width limited by maximum junction temperature.

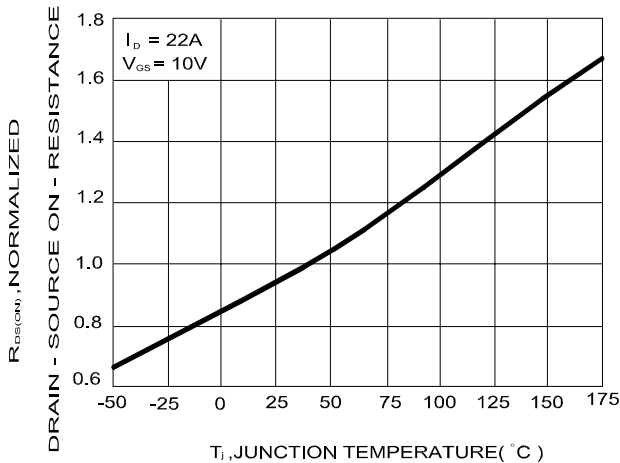
REMARK: THE PRODUCT MARKED WITH “P45N02LDG”, DATE CODE or LOT #

Orders for parts with Lead-Free plating can be placed using the PXXXXXXG parts name

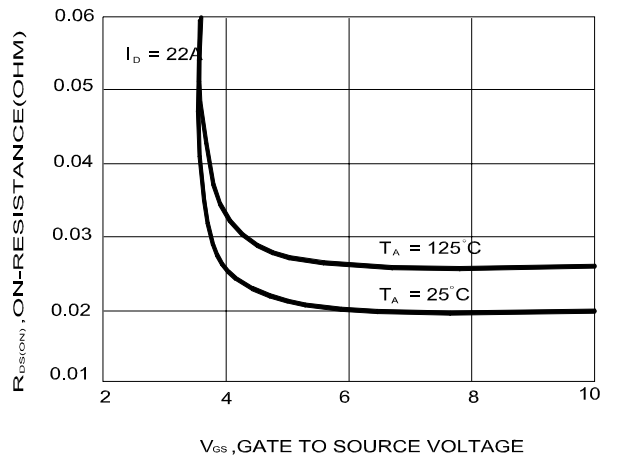
TYPICAL CHARACTERISTICS



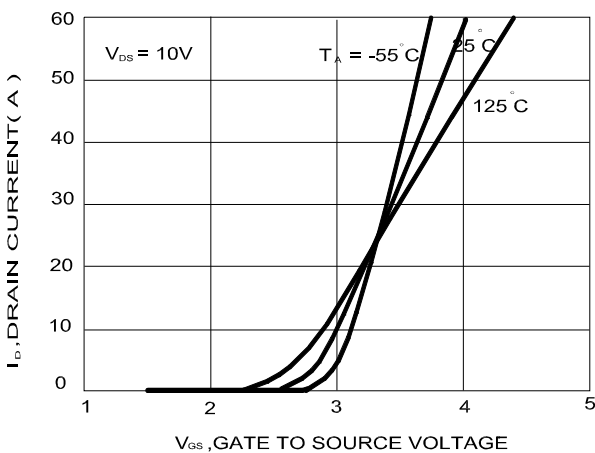
ON-RESISTANCE VARIATION WITH TEMPERATURE



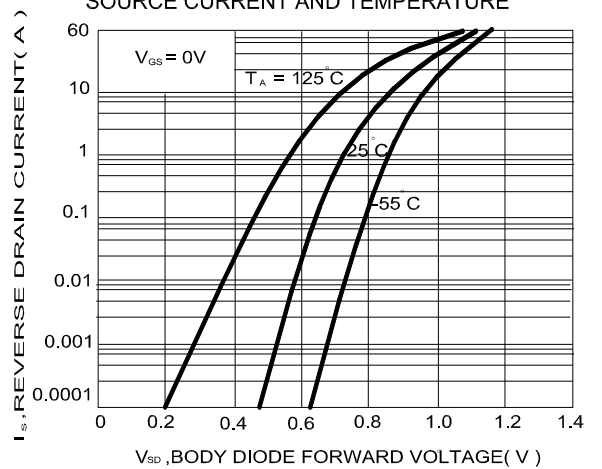
ON-RESISTANCE VARIATION WITH GATE-TO-SOURCE VOLTAGE

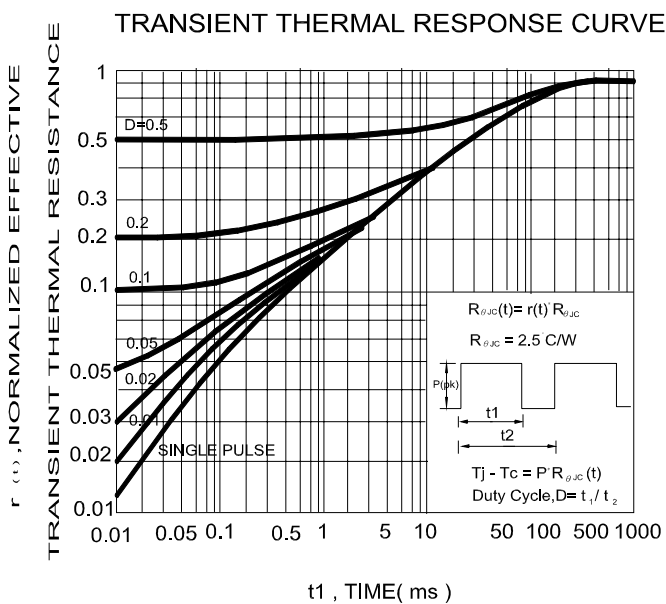
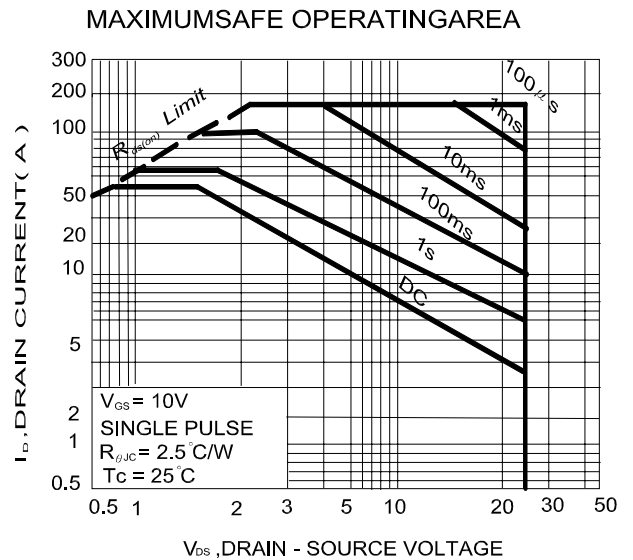
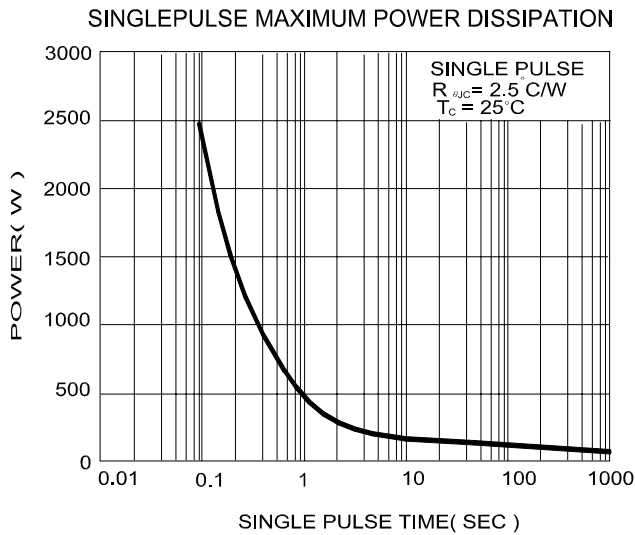
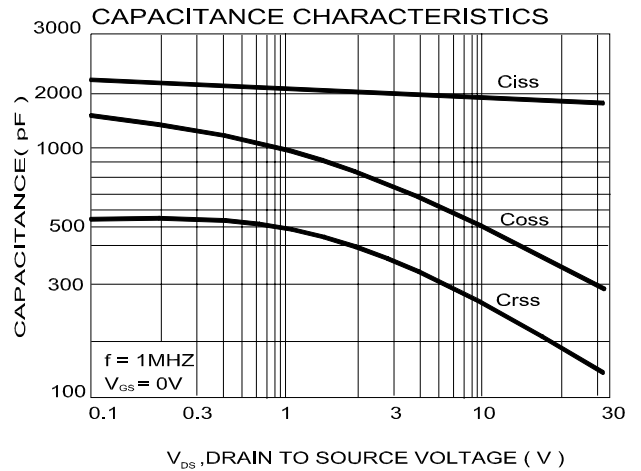
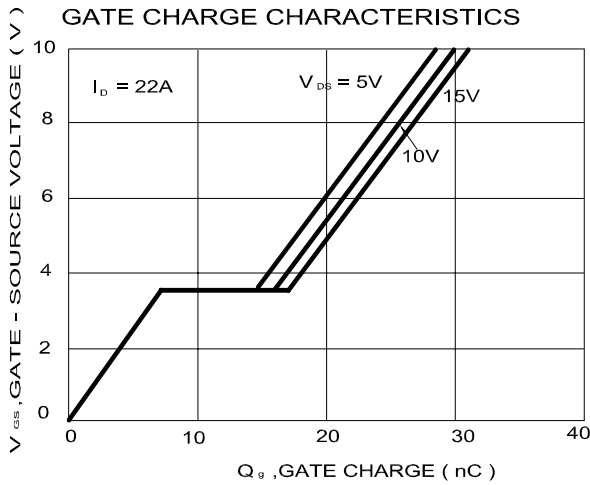


TRANSFER CHARACTERISTICS



BODY DIODE FORWARD VOLTAGE VARIATION WITH SOURCE CURRENT AND TEMPERATURE





TO-252 (DPAK) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	9.35		10.4	H	0.89		2.03
B	2.2		2.4	I	6.35		6.80
C	0.45		0.6	J	5.2		5.5
D	0.89		1.5	K	0.6		1
E	0.45		0.69	L	0.5		0.9
F	0.03		0.23	M	3.96	4.57	5.18
G	5.2		6.2	N			

