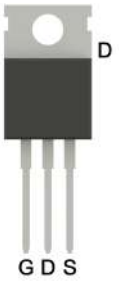
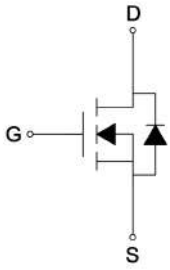
N-Channel Enhancement Mode Power MOSFET

Features:

- Low Gate Charge
- Fast Switching Characteristic
- Pb-free lead plating and halogen-free

TO-220





BV_{DSS}	200	V
$R_{DS(ON)}$ typ. @ V_{GS}=10V, I_D=3A	125	mΩ
I_D @ V_{GS}=10V, T_C=25°C	15	A
I_D @ V_{GS}=10V, T_A=25°C	3.6	

Ordering Information

Device	Package	Shipping
KWE120N20	TO-220	50 pcs/tube, 20 tubes/box, 5 boxes / carton

Absolute Maximum Ratings (T_A=25°C)

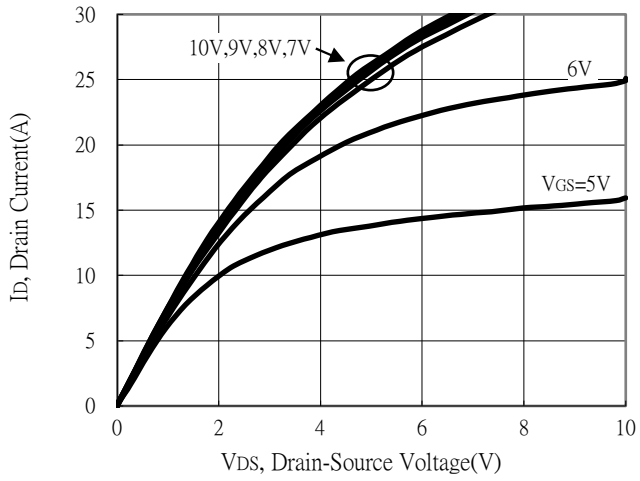
Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current @ V_{GS}=10V, T_C=25°C	*a	I_D	15	A
Continuous Drain Current @ V_{GS}=10V, T_C=100°C	*a		9.5	
Continuous Drain Current @ V_{GS}=10V, T_A=25°C	*b		3.6	
Continuous Drain Current @ V_{GS}=10V, T_A=70°C	*b		2.9	
Pulsed Drain Current	*c	I_{DM}	30	
Continuous Body Diode Forward Current @ T_C=25°C	*a	I_S	15	
Pulsed Body Diode Forward Current @ T_C=25°C	*a	I_{SM}	30	
Avalanche Current @ L=0.1mH		I_{AS}	5	
Avalanche Energy @ L=0.5mH		E_{AS}	5	mJ
Total Power Dissipation	T_C=25°C *a	P_D	83	W
	T_C=100°C *a		33	
	T_A=25°C *b		5.2	
	T_A=70°C *b		3.3	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55~+150	°C
Steady State Thermal Resistance, Junction-to-Case		$R_{\theta JC}$	1.5	°C/W
Steady State Thermal Resistance, Junction-to-Ambient	*b	$R_{\theta JA}$	24	

Electrical Characteristics (T_A=25°C, unless otherwise specified)

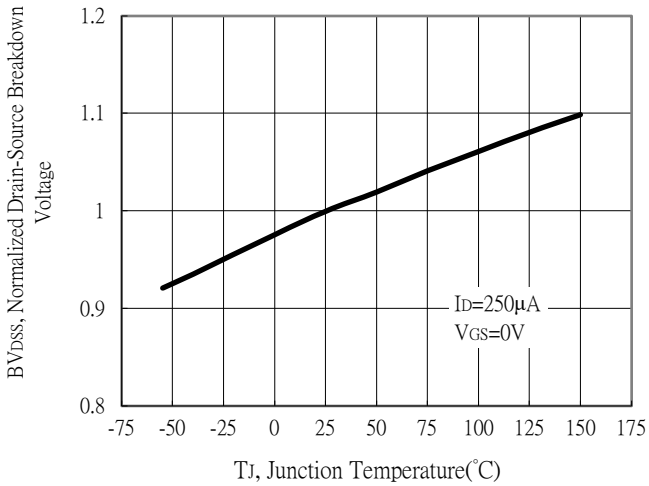
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	200	-	-	V	V_{GS}=0V, I_D=250μA
$V_{GS(th)}$	2	-	4		V_{DS}=V_{GS}, I_D=250μA
G_{FS}	-	6.6	-	S	V_{DS}=10V, I_D=3A
I_{GSS}	-	-	±100	nA	V_{GS}=±20V, V_{DS}=0V
I_{DSS}	-	-	1	μA	V_{DS}=160V, V_{GS}=0V
$R_{DS(ON)}$	-	125	165	mΩ	V_{GS}=10V, I_D=3A
Dynamic					
C_{iss}	-	763	-	pF	V_{DS}=100V, V_{GS}=0V, f=1MHz
C_{oss}	-	50	-		
C_{rss}	-	26	-		
R_g	-	2.2	-	Ω	f=1MHz
Q_g *d,e	-	18	-	nC	V_{DS}=100V, I_D=3A, V_{GS}=10V
Q_{gs} *d,e	-	3.8	-		
Q_{gd} *d,e	-	6	-		
$t_{d(ON)}$ *d,e	-	13	-	ns	V_{DS}=100V, I_D=3A, V_{GS}=10V, R_{GS}=6Ω
tr *d,e	-	19	-		
$t_{d(OFF)}$ *d,e	-	34	-		
t_f *d,e	-	16	-		
Source-Drain Diode					
V_{SD} *d	-	0.77	1.2	V	I_S=3A, V_{GS}=0V
t_{rr}	-	64	-	ns	I_F=3A, di/dt=100A/μs
Q_{rr}	-	135	-	nC	

Typical Characteristics

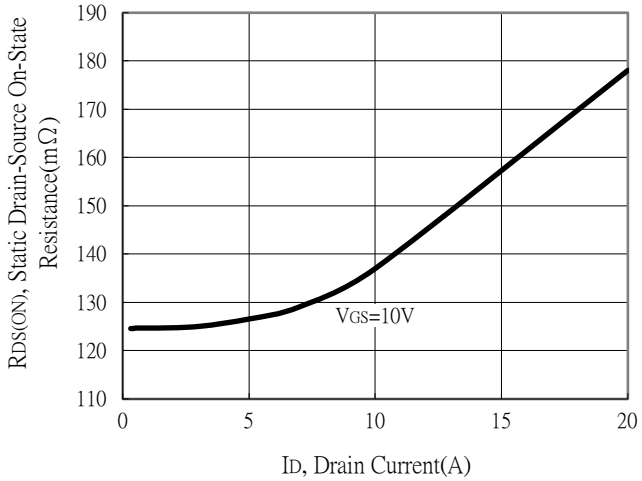
Typical Output Characteristics



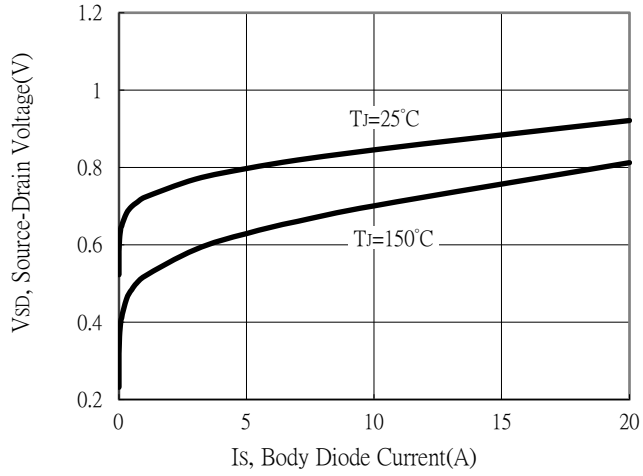
Breakdown Voltage vs Ambient Temperature



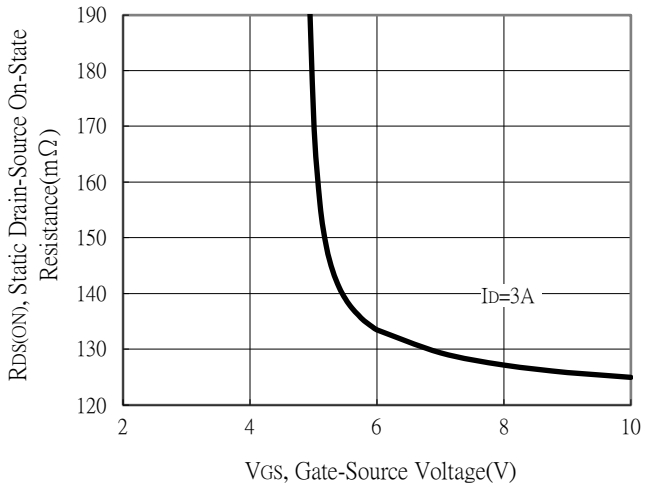
Static Drain-Source On-State resistance vs Drain Current



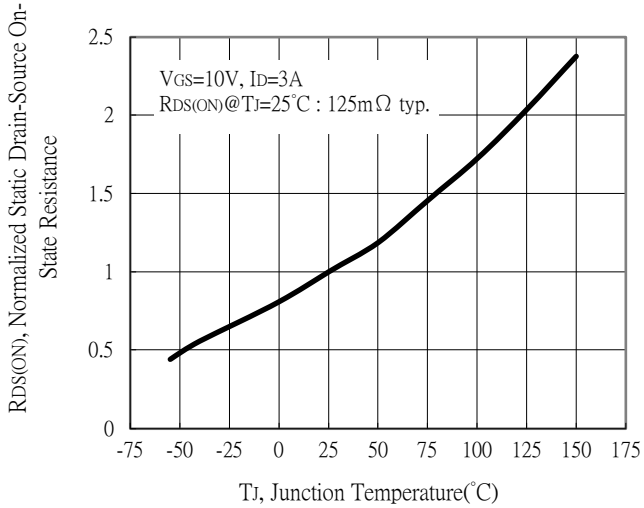
Body Diode Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

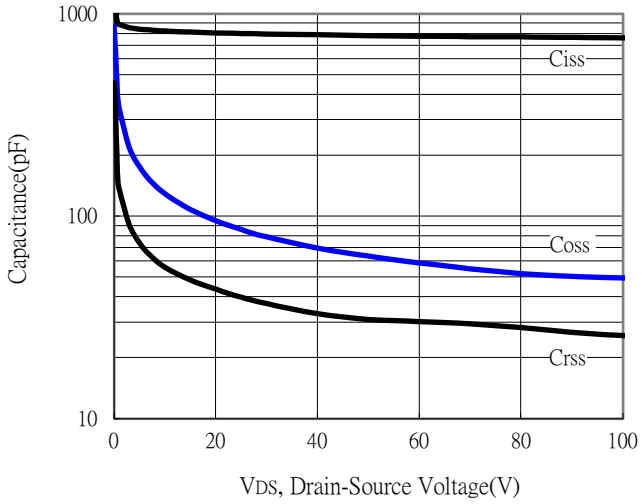


Drain-Source On-State Resistance vs Junction Temperature

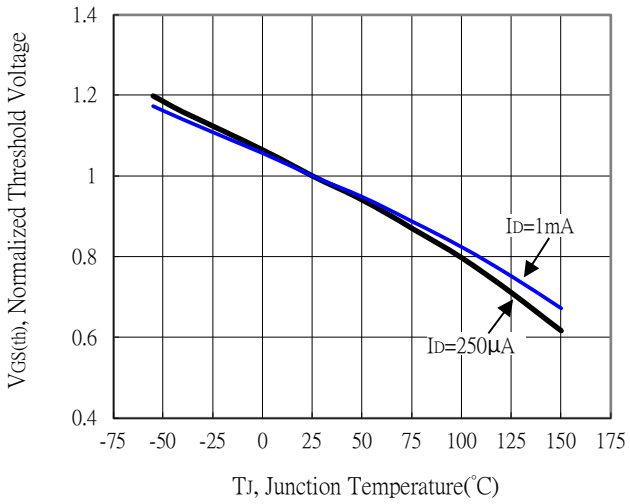


Typical Characteristics

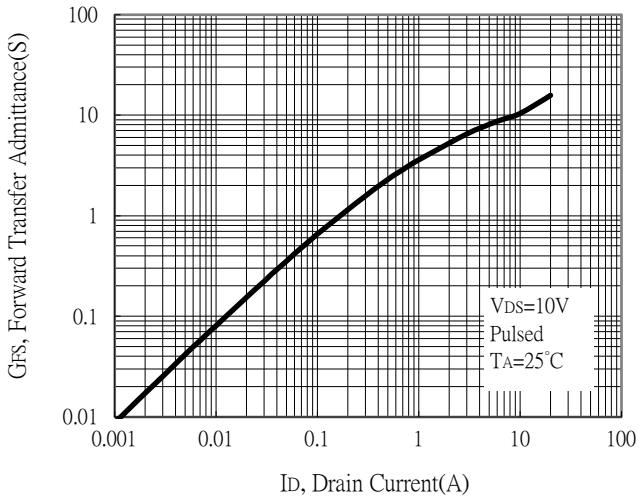
Capacitance vs Drain-to-Source Voltage



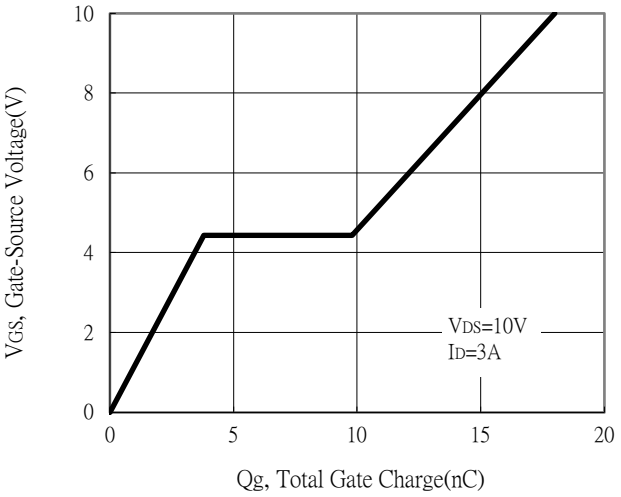
Threshold Voltage vs Junction Temperature



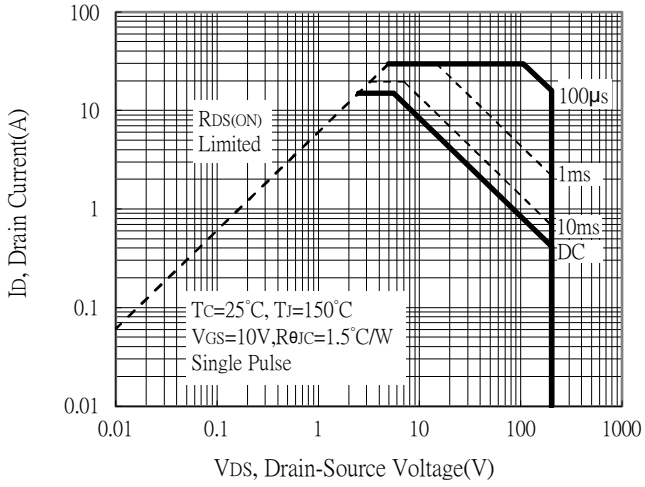
Forward Transfer Admittance vs Drain Current



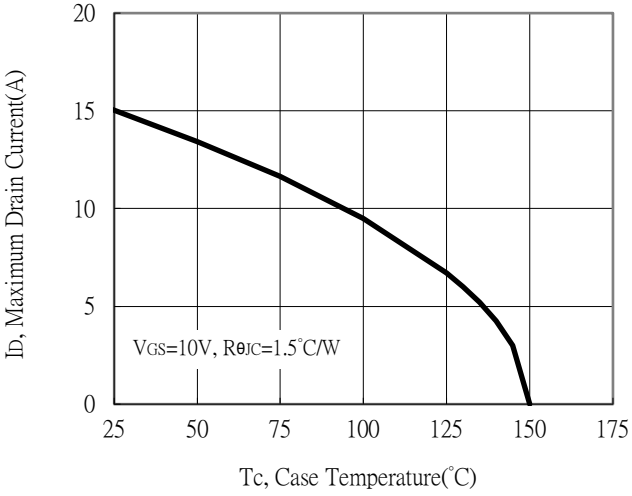
Gate Charge Characteristics



Maximum Safe Operating Area

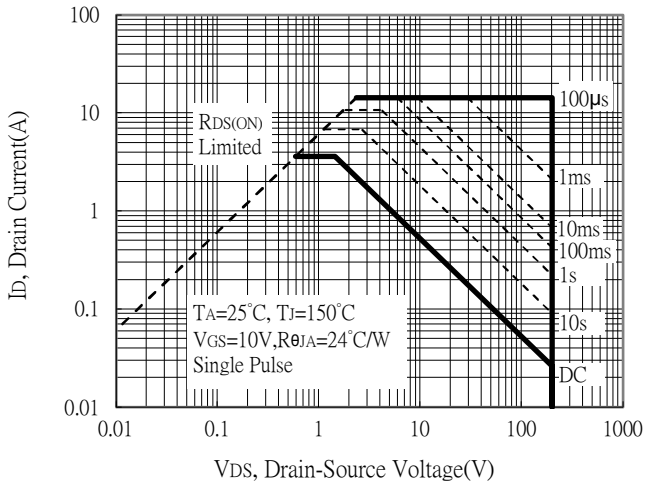


Maximum Drain Current vs Case Temperature

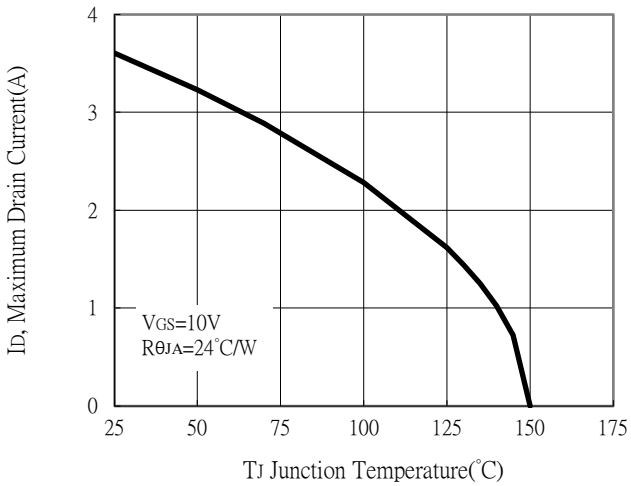


Typical Characteristics

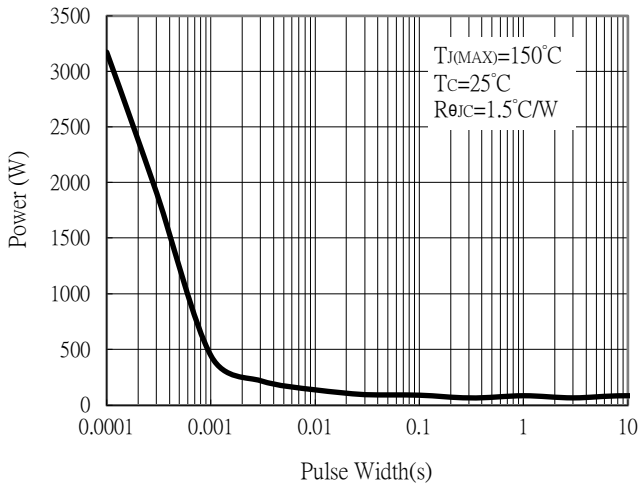
Maximum Safe Operating Area



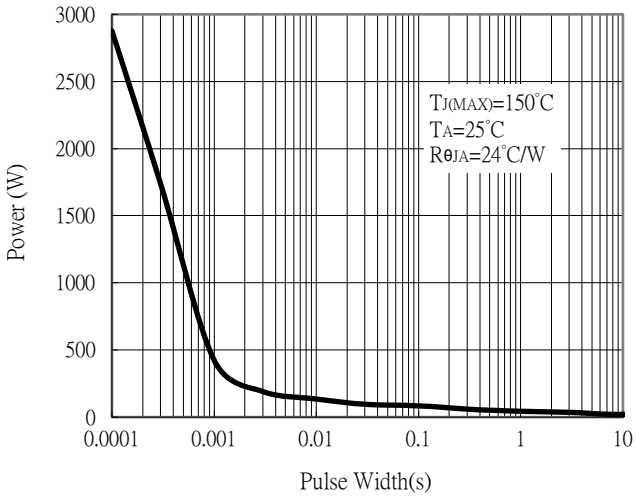
Maximum Drain Current vs Junction Temperature



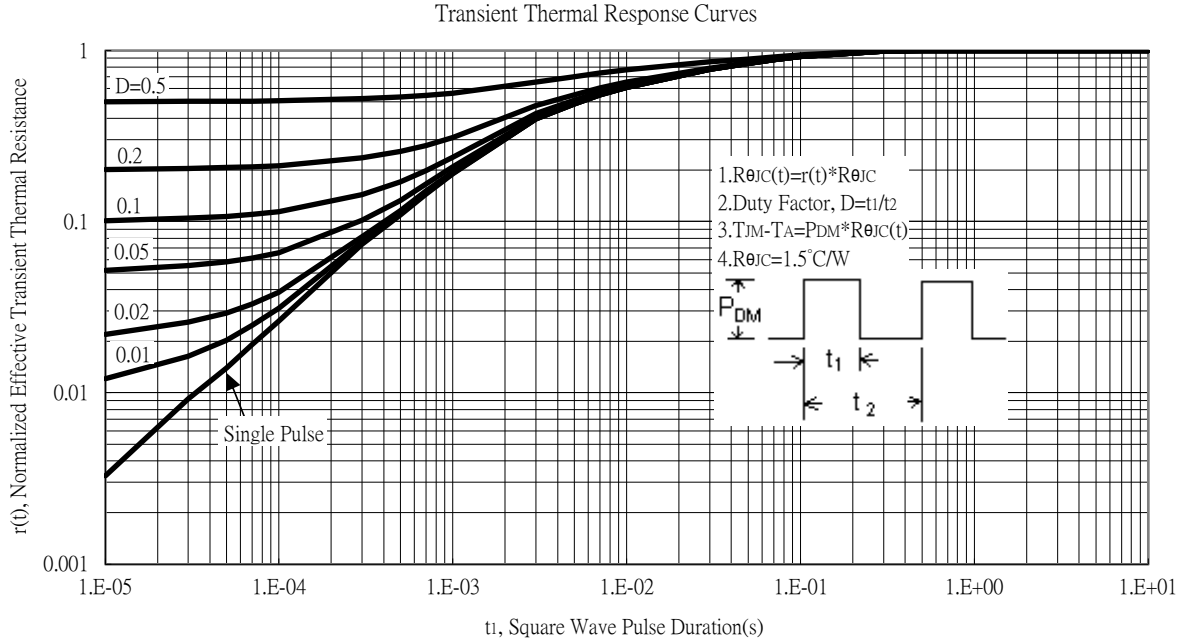
Single Pulse Power Rating, Junction to Case

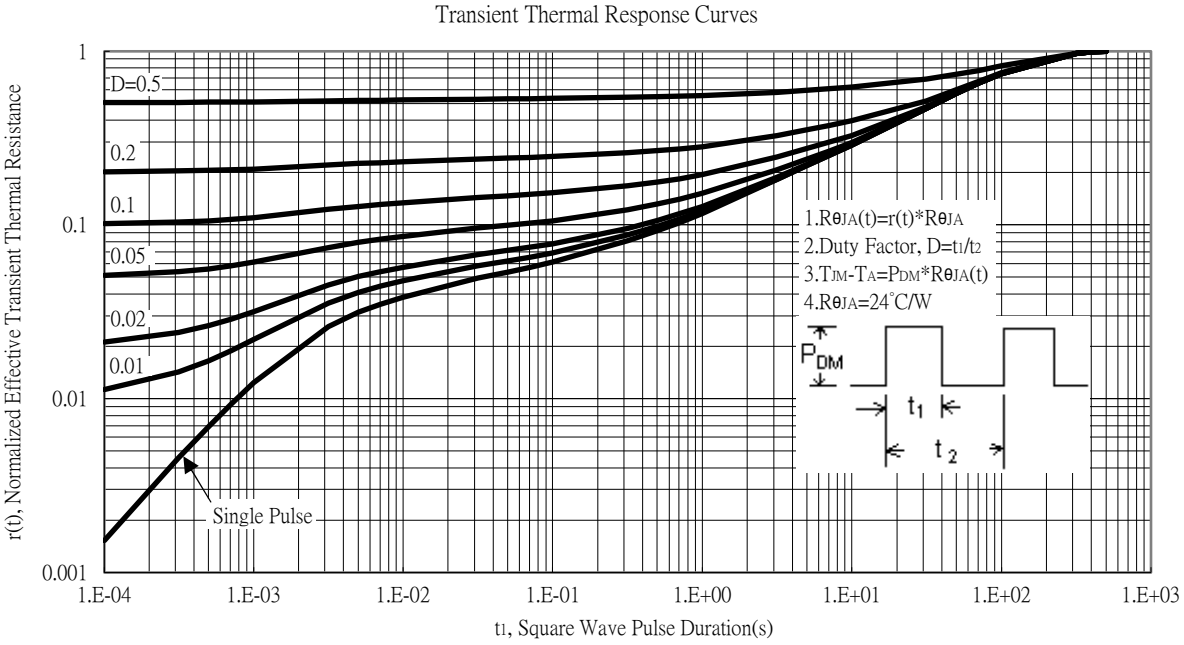


Single Pulse Power Rating, Junction to Ambient

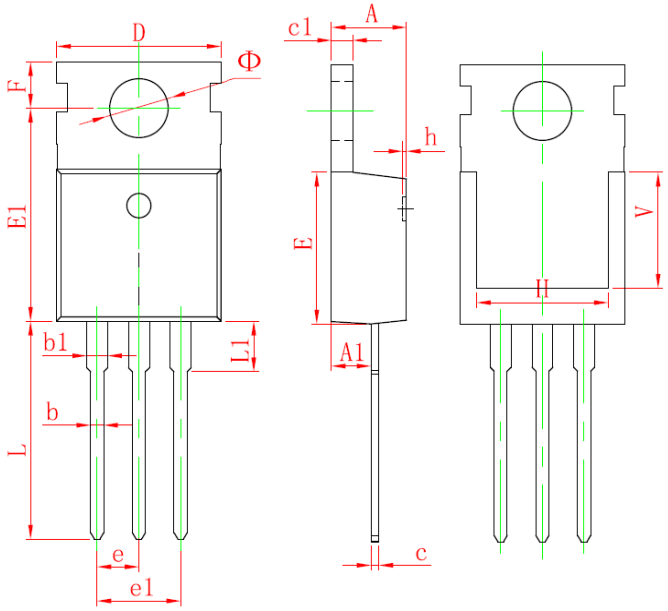


Typical Characteristics



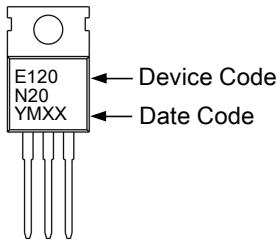


TO-220 Dimension



3-Lead TO-220 Plastic Package

Marking



YMXX: Date Code Marking

Y: Year Code, the last digit of Christian year

M: Month Code

A: Jan	B: Feb	C: Mar	D: Apr	E: May	F: Jun
G: Jul	H: Aug	J: Sep	K: Oct	L: Nov	M: Dec

XX: Production Serial Number, 01~99

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Min.		Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181	e	2.540	TYP	0.100	TYP
A1	2.250	2.550	0.089	0.100	e1	4.980	5.180	0.196	0.204
b	0.710	0.910	0.028	0.036	F	2.650	2.950	0.104	0.116
b1	1.170	1.370	0.046	0.054	H	7.900	8.100	0.311	0.319
c	0.330	0.650	0.013	0.026	h	0.000	0.300	0.000	0.012
c1	1.200	1.400	0.047	0.055	L	12.900	13.400	0.508	0.528
D	9.910	10.250	0.390	0.404	L1	2.850	3.250	0.112	0.128
E	8.950	9.750	0.352	0.384	V	7.500	REF	0.295	REF
E1	12.650	12.950	0.498	0.510	Φ	3.400	3.800	0.134	0.150