

N -Channel Logic Level Enhancement Mode Power MOSFET

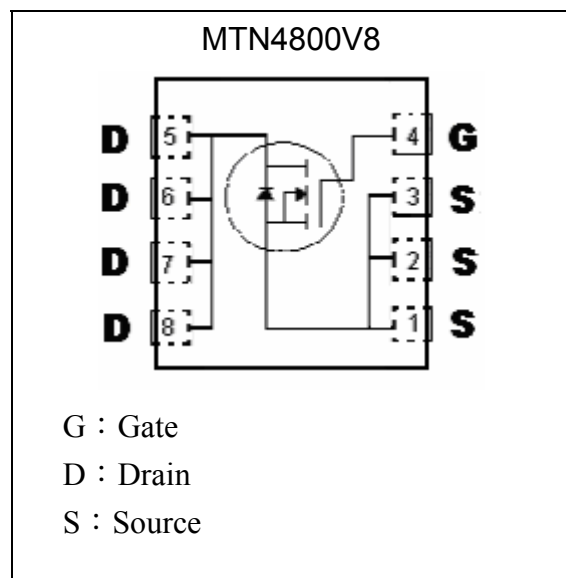
MTN4800V8

BV_{DSS}		30V
I_D		18A
$R_{DS(on)(TYP)}$	$V_{GS}=10V, I_D=10A$	$14m\Omega$
	$V_{GS}=4.5V, I_D=8A$	$22m\Omega$

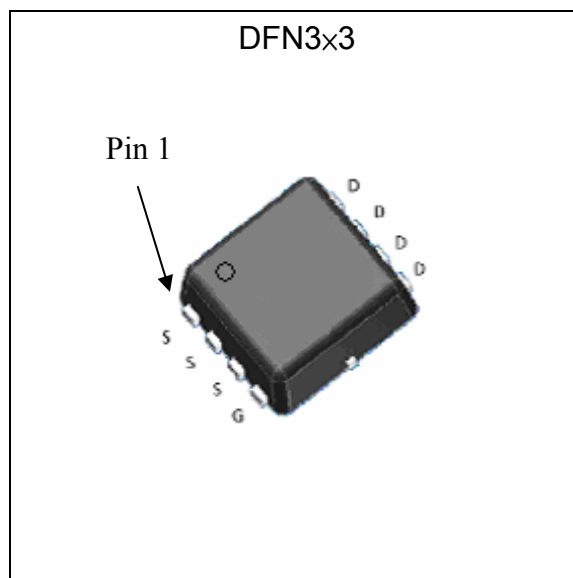
Features

- Low Gate Charge
- Simple Drive Requirement
- Pb-free lead plating package

Equivalent Circuit

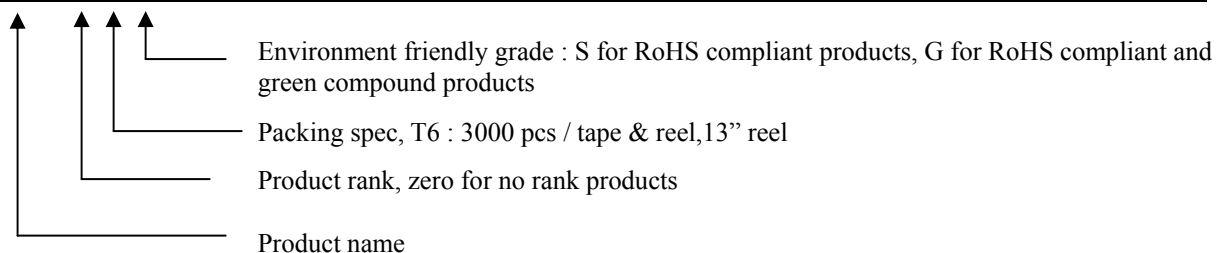


Outline



Ordering Information

Device	Package	Shipping
MTN4800V8-0-T6-G	DFN3x3 (Pb-free lead plating and halogen-free package)	3000 pcs / tape & reel



**Absolute Maximum Ratings** ($T_C=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current @ $T_C=25^{\circ}\text{C}$	I_D	18	A
Continuous Drain Current @ $T_C=100^{\circ}\text{C}$	I_D	11.4	
Pulsed Drain Current *1	I_{DM}	72	
Total Power Dissipation @ $T_C=25^{\circ}\text{C}$	P_D	8	W
Total Power Dissipation @ $T_A=25^{\circ}\text{C}$		2.5	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	$-55 \sim +150$	$^{\circ}\text{C}$

Note : *1. Pulse width limited by maximum junction temperature

*2. Duty cycle $\leq 1\%$

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{th,j-c}$	16	$^{\circ}\text{C/W}$
Thermal Resistance, Junction-to-ambient, max	$R_{th,j-a}$	50 *	$^{\circ}\text{C/W}$

* Surface mounted on a 1 in² pad of 2oz copper.

Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	30	-	-	V	$V_{GS}=0V, I_D=250\mu A$
$\Delta BV_{DSS}/\Delta T_J$	-	0.02	-	$V/^{\circ}\text{C}$	Reference to 25°C , $I_D=1mA$
$V_{GS(th)}$	1	1.7	2.5	V	$V_{DS}=V_{GS}, I_D=250\mu A$
I_{GSS}	-	-	± 100	nA	$V_{GS}=\pm 20V, V_{DS}=0V$
I_{DSS}	-	-	1	μA	$V_{DS}=30V, V_{GS}=0V, T_J=25^{\circ}\text{C}$
	-	-	25	μA	$V_{DS}=30V, V_{GS}=0V, T_J=125^{\circ}\text{C}$
* $R_{DS(ON)}$	-	14	20	m Ω	$I_D=10A, V_{GS}=10V$
	-	22	28		$I_D=8A, V_{GS}=4.5V$
* G_{FS}	-	14	-	S	$V_{DS}=5V, I_D=10A$
Dynamic					
C_{iss}	-	697	-	pF	$V_{DS}=25V, V_{GS}=0, f=1MHz$
C_{oss}	-	61	-		
C_{rss}	-	54	-		
$t_{d(ON)}$	-	10	-	ns	$V_{DS}=15V, I_D=1A,$ $V_{GS}=10V, R_G=6\Omega, R_D=15\Omega$
t_r	-	5	-	ns	
$t_{d(OFF)}$	-	18	-	ns	
t_f	-	14	-	ns	
Q_g	-	9	-	nC	$V_{DS}=15V, I_D=10A, V_{GS}=10V,$
Q_{gs}	-	2.3	-	nC	
Q_{gd}	-	3.4	-	nC	

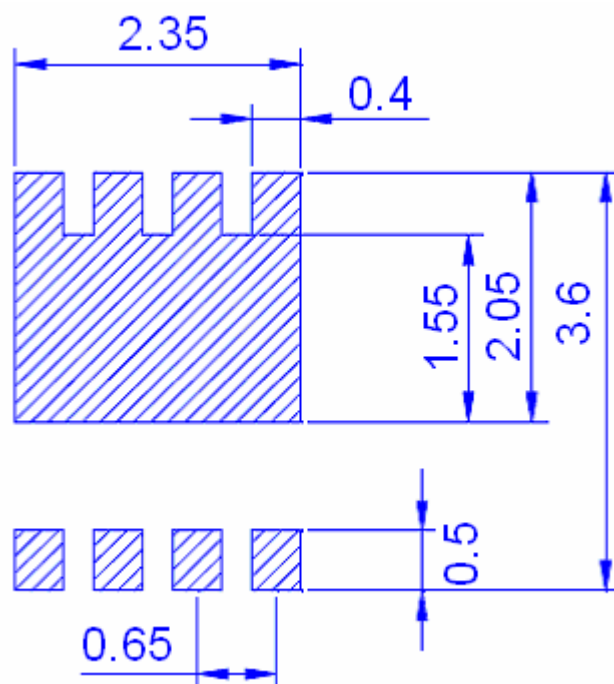
*Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

Source Drain Diode

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
*I _S	-	-	4	A	
*I _{SM}	-	-	16		
*V _{SD}	-	0.8	1.3	V	I _S =4A, V _{GS} =0V
*T _{rr}	-	9	-	ns	I _S =4A, V _{GS} =0V, dI/dt=100A/μs
Q _{rr}	-	20	-	nC	

*Pulse Test : Pulse Width ≤300μs, Duty Cycle ≤2%

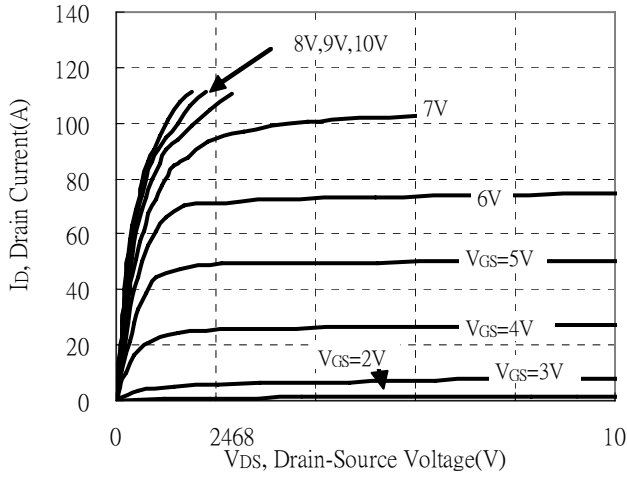
Recommended Soldering Footprint



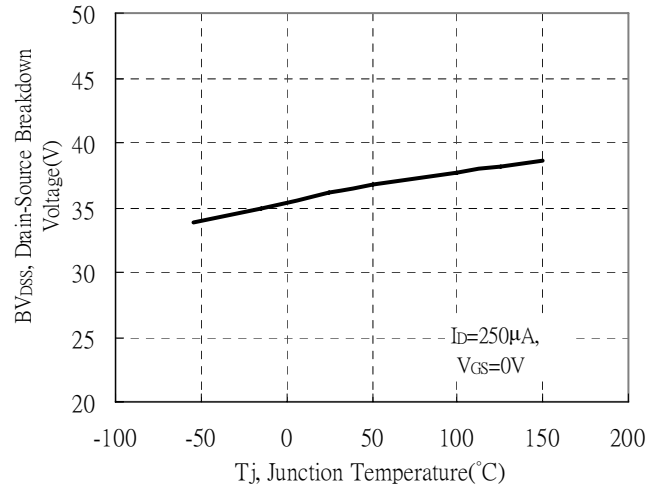
unit : mm

Typical Characteristics

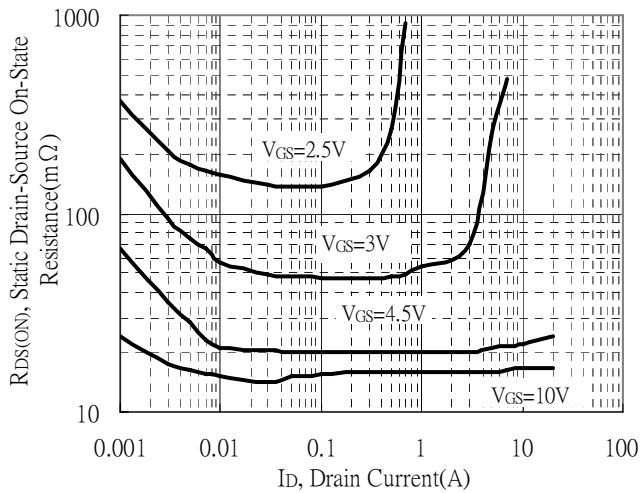
Typical Output Characteristics



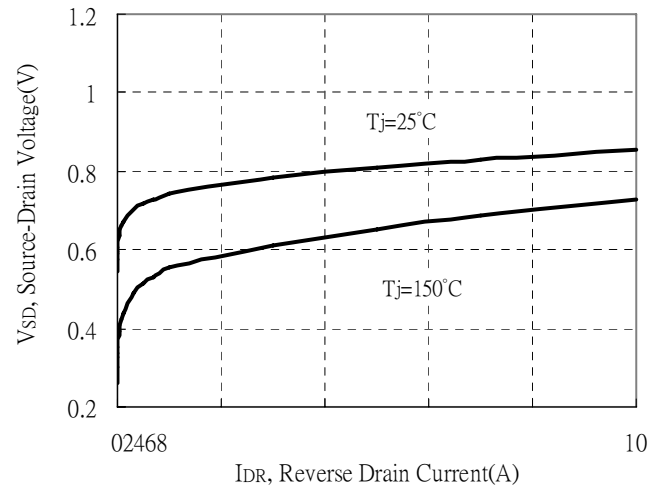
Breakdown Voltage vs Ambient Temperature



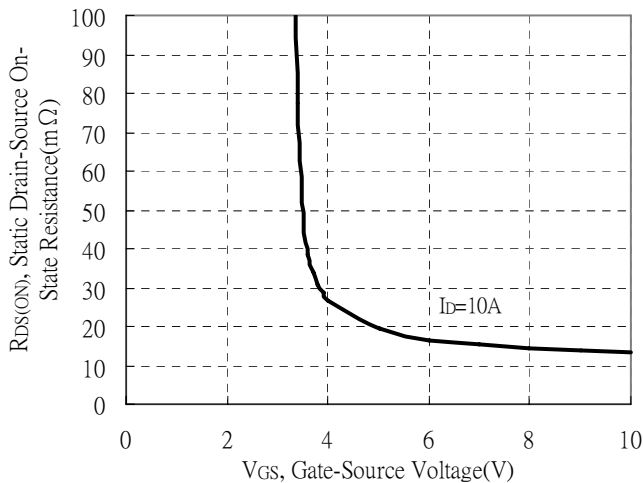
Static Drain-Source On-State resistance vs Drain Current



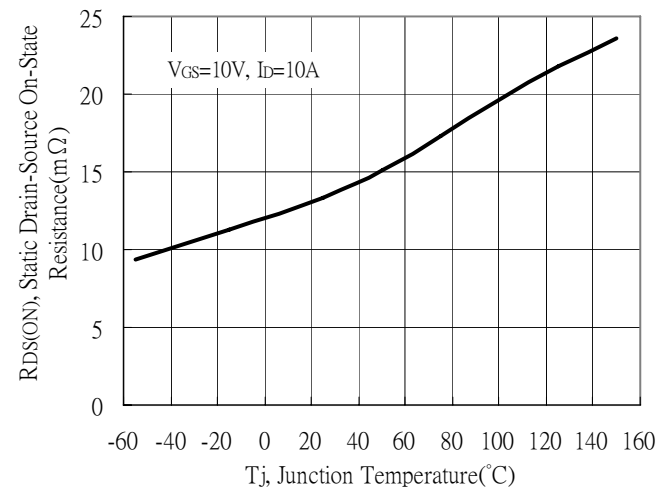
Reverse Drain Current vs Source-Drain Voltage



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

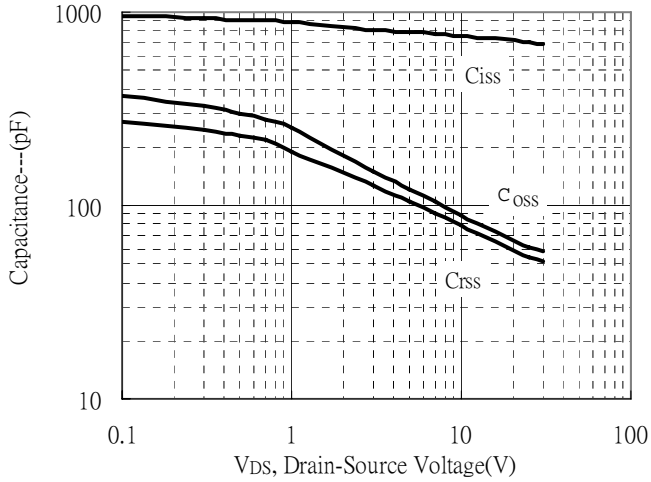


Drain-Source On-State Resistance vs Junction Temperature

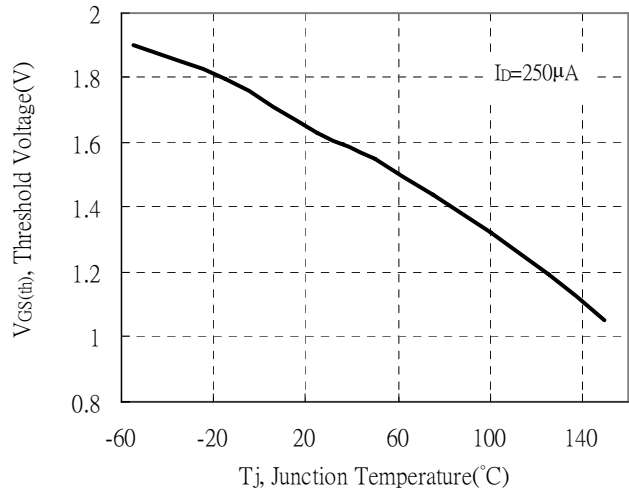


Typical Characteristics(Cont.)

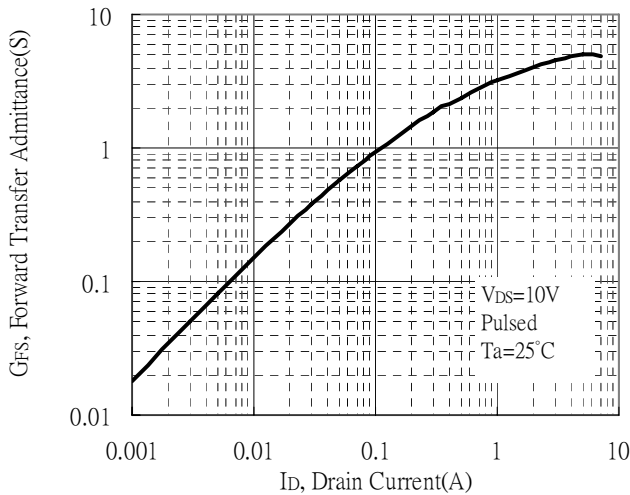
Capacitance vs Drain-to-Source Voltage



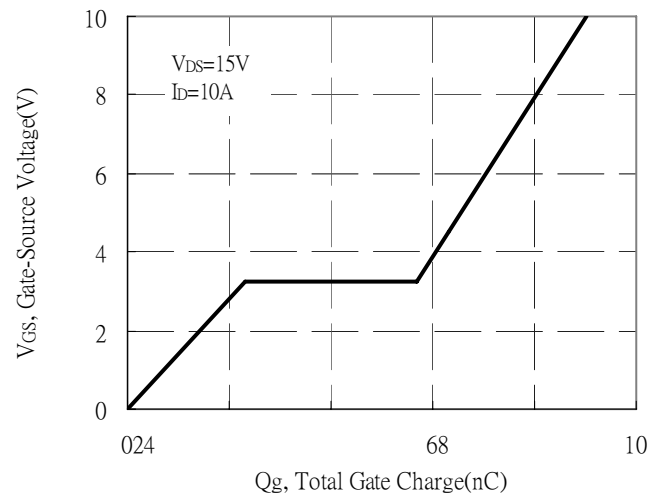
Threshold Voltage vs Junction Temperature



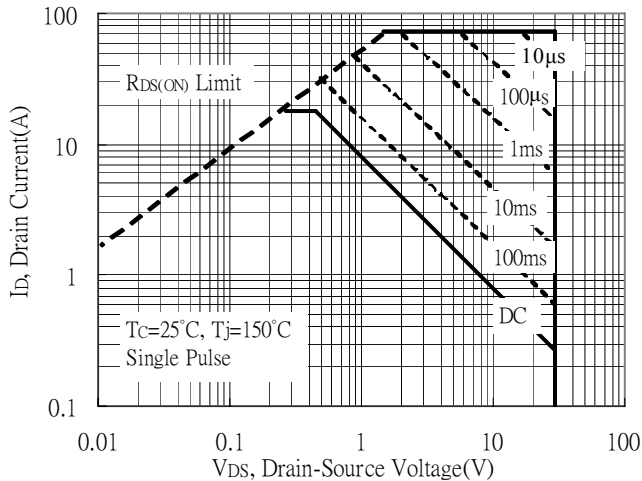
Forward Transfer Admittance vs Drain Current



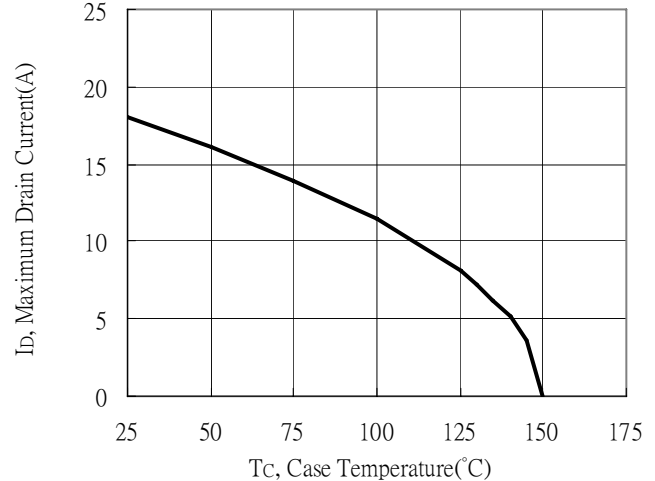
Gate Charge Characteristics



Maximum Safe Operating Area

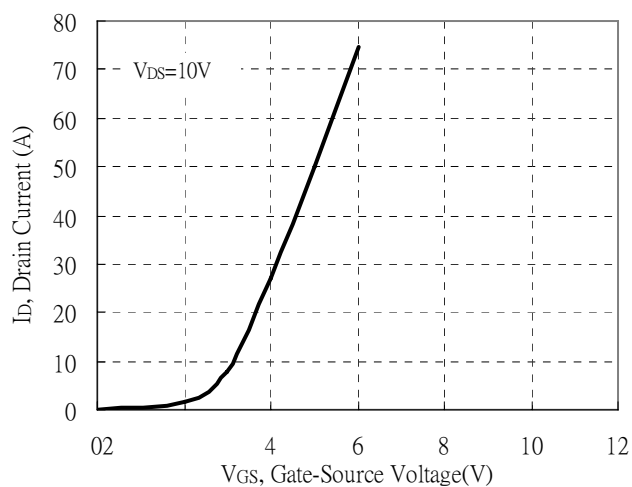


Maximum Drain Current vs Case Temperature

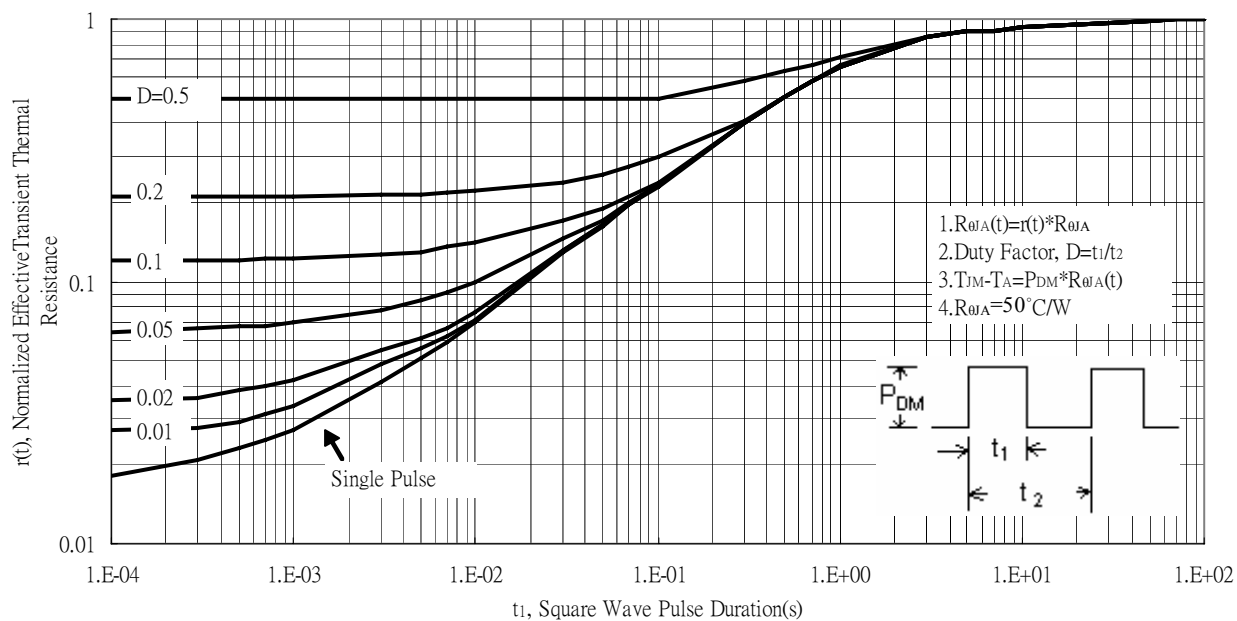


Typical Characteristics(Cont.)

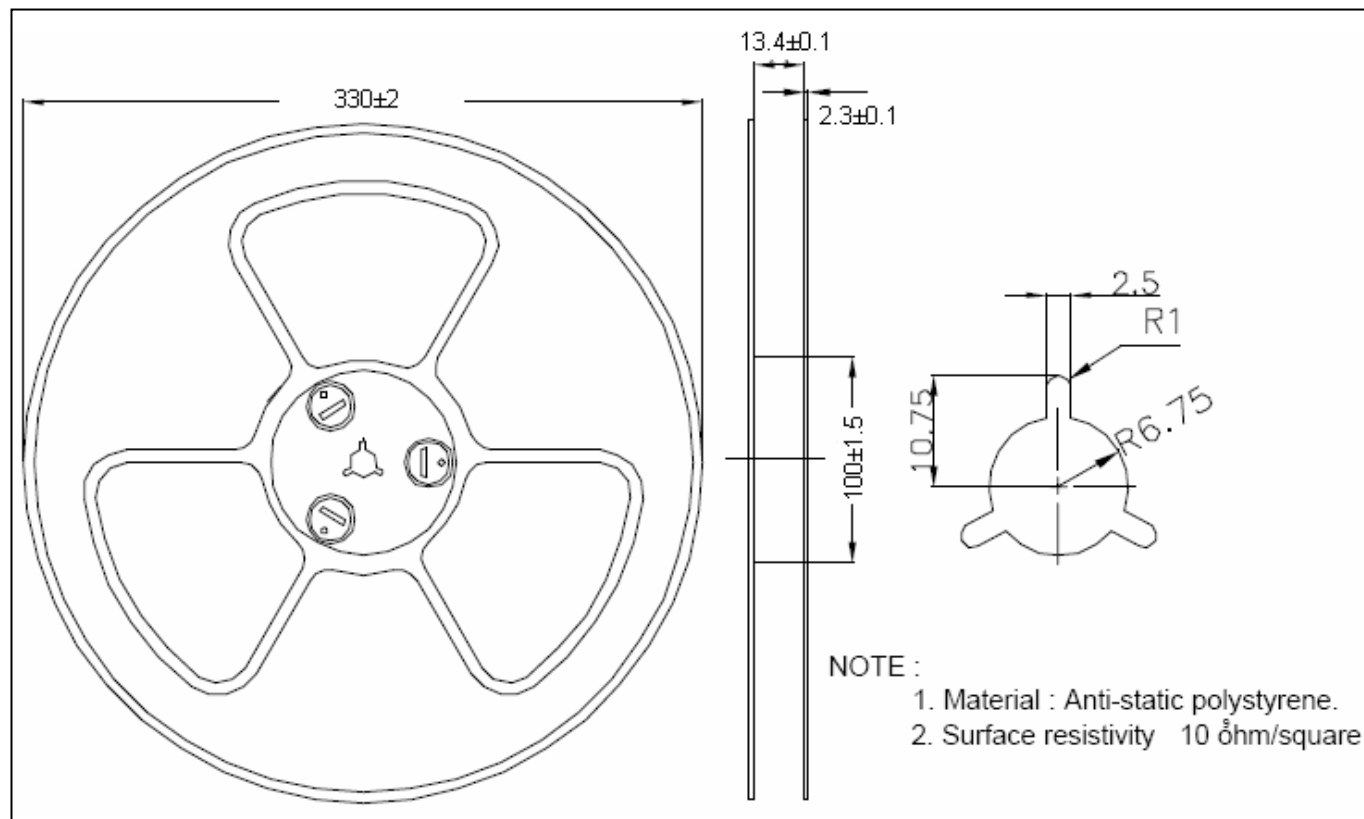
Typical Transfer Characteristics



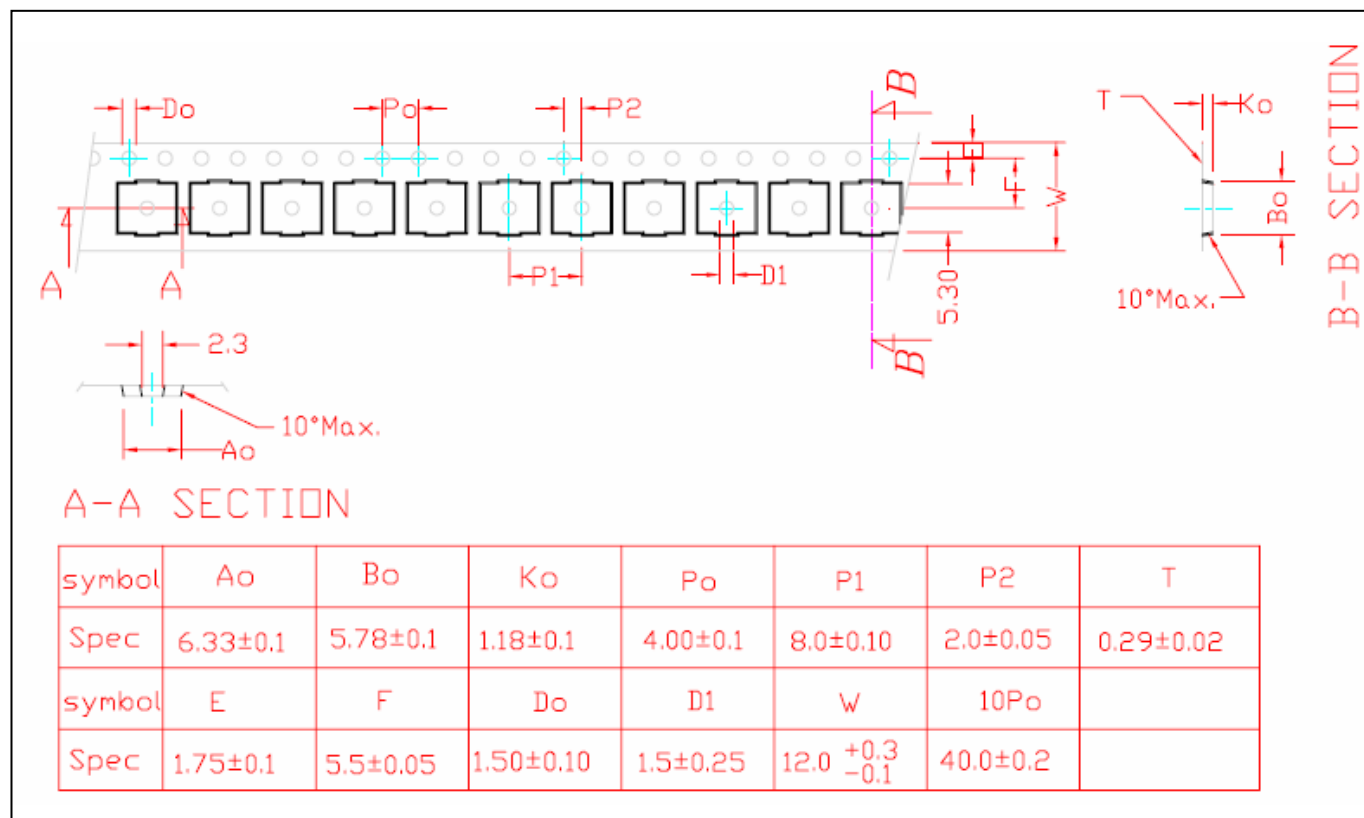
Transient Thermal Response Curves



Reel Dimension



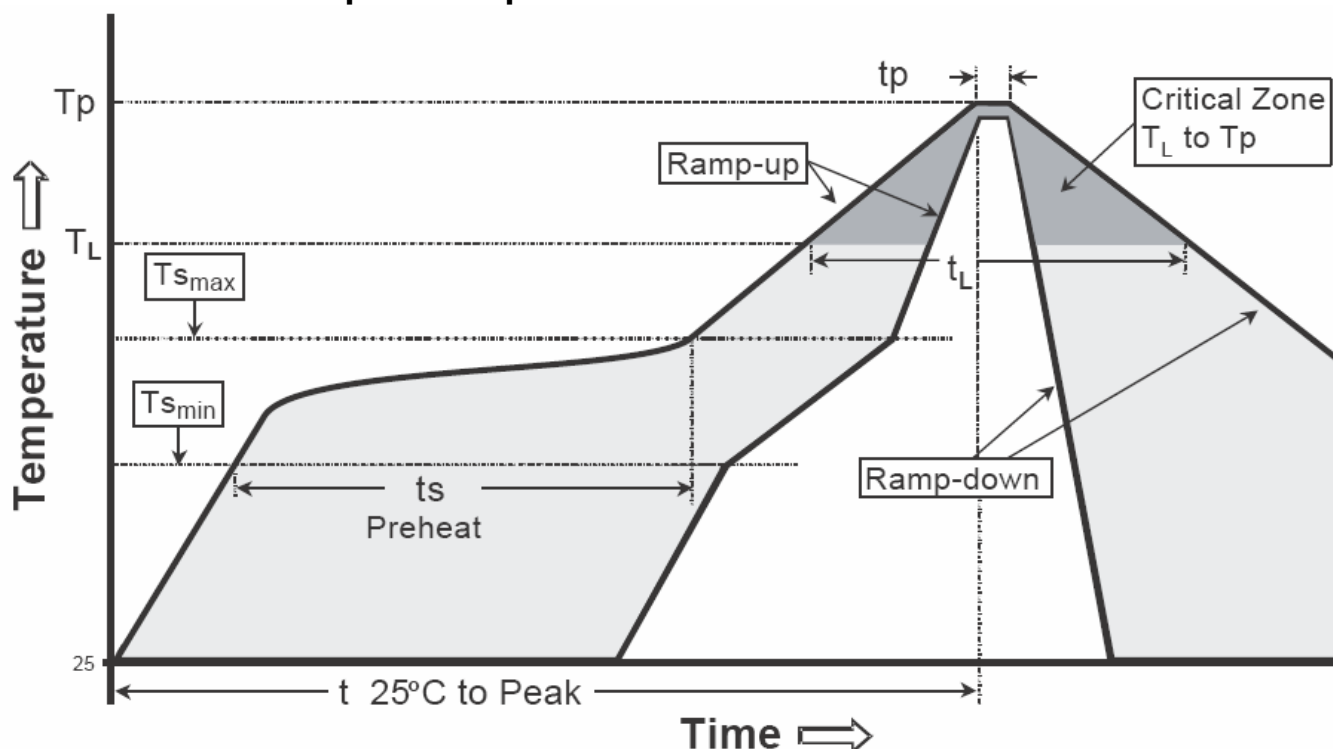
Carrier Tape Dimension



Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

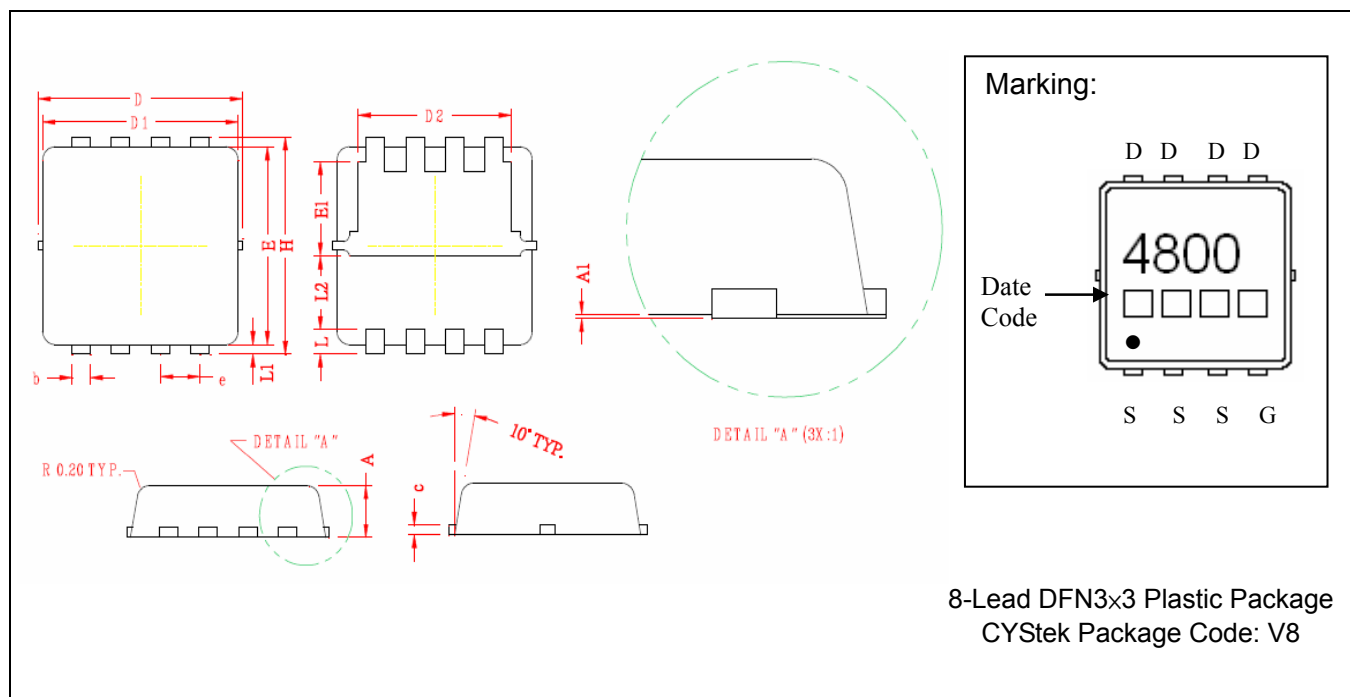
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(Ts min)	100°C	150°C
-Temperature Max(Ts max)	150°C	200°C
-Time(ts min to ts max)	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (Tl)	183°C	217°C
- Time (tL)	60-150 seconds	60-150 seconds
Peak Temperature(Tp)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

DFN3x3 Dimension



*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.0276	0.0354	0.70	0.90	E	0.1181	0.1260	3.00	3.20
A1	0.0000	0.0197	0.00	0.50	E1	0.0531	0.0610	1.35	1.55
b	0.0094	0.0138	0.24	0.35	e	0.0256	BSC	0.65	BSC
c	0.0039	0.0079	0.10	0.20	H	0.1260	0.1339	3.20	3.40
D	0.1280	0.1339	3.25	3.40	L	0.0118	0.0197	0.30	0.50
D1	0.1201	0.1280	3.05	3.25	L1	0.0039	0.0079	0.10	0.20
D2	0.0945	0.1024	2.40	2.60	L2	0.0445	REF	1.13	REF

Notes: 1. Controlling dimension: millimeters.

2. Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.

3. If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead: pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.

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