P-Channel Enhancement Mode Power MOSFET

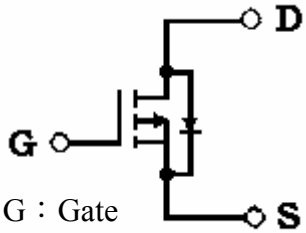
MTP9575L3

Features

- Simple Drive Requirement
- Low On-resistance
- Fast switching Characteristic
- Pb-free package

Symbol

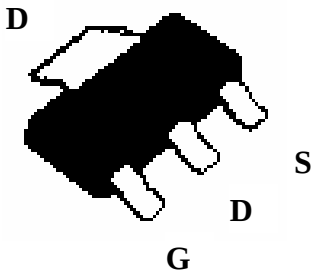
MTP9575L3



G：Gate
D：Drain
S：Source

Outline

SOT-223



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	±25	V
Continuous Drain Current @V_{GS}=-10V, T_A=25°C	I_D	-4.0 *1	A
Continuous Drain Current @V_{GS}=-10V, T_A=70°C	I_D	-3.2 *1	A
Pulsed Drain Current	I_{DM}	-20 *1	A
Total Power Dissipation (T_A=25℃)	Pd	3	W
Linear Derating Factor		0.02	W/°C
Operating Junction and Storage Temperature	Tj, Tstg	-55~+150	°C
Thermal Resistance, Junction-to-ambient, max	$R_{th,j-a}$	45 *2	°C/W

Note : *1. Pulse width limited by maximum junction temperature
*2. Surface mounted on 1 in^2 copper pad of FR-4 board; 125°C/W when mounted on minimum copper pad

Characteristics (Tj=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	-60	-	-	V	V_{GS}=0, I_D=-250μA
$\Delta BV_{DSS}/\Delta Tj$	-	-0.04	-	V/°C	Reference to 25°C, I_D=-1mA
$V_{GS(th)}$	-1.0	-	-3.0	V	V_{DS} = V_{GS}, I_D=-250μA
G_{FS}	-	7	-	S	V_{DS} =-10V, I_D=-4A
I_{GSS}	-	-	±100	nA	V_{GS}=±25
I_{DSS}	-	-	-1	μA	V_{DS} =-60V, V_{GS} =0
I_{DSS}	-	-	-25	μA	V_{DS} =-48V, V_{GS} =0, Tj=70°C
*$R_{DS(ON)}$	-	-	90	mΩ	V_{GS} =-10V, I_D=-4A
*$R_{DS(ON)}$	-	-	120	mΩ	V_{GS} =-4.5V, I_D=-3A
Dynamic					
*Qg	-	18	28	nC	I_D=-4A, V_{DS}=-48V, V_{GS}=-4.5V
*Qgs	-	5	-		
*Qgd	-	7	-		
*$t_{d(ON)}$	-	12	-	ns	V_{DS}=-30V, I_D=-1A, V_{GS}=-10V, R_G=3.3Ω, R_D=30Ω
*tr	-	5	-		
*$t_{d(OFF)}$	-	68	-		
*t_f	-	32	-		
Ciss	-	1745	2790	pF	V_{GS}=0V, V_{DS}=-25V, f=1MHz
Coss	-	165	-		
Crss	-	125	-		
Source-Drain Diode					
*V_{SD}	-	-	-1.2	V	I_S=-2A, V_{GS}=0V
*trr	-	56	-	ns	I_S=-4A, V_{GS}=0, dI/dt=100A/μs
*Qrr	-	146	-	nC	

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

Ordering Information

Device	Package	Shipping	Marking
MTP9575L3	SOT-223 (Pb-free)	2500 pcs / Tape & Reel	9575

Characteristic Curves

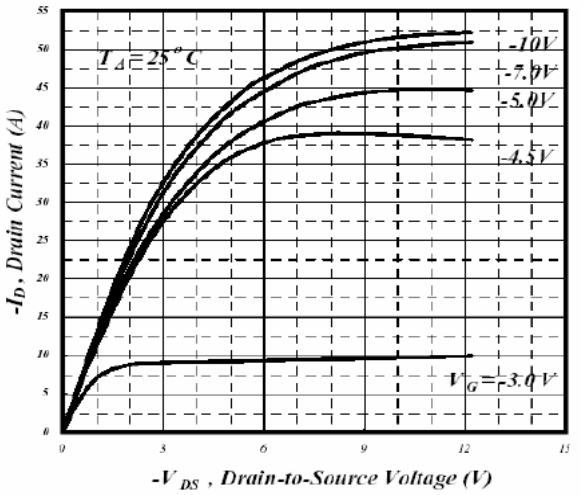


Fig 1. Typical Output Characteristics

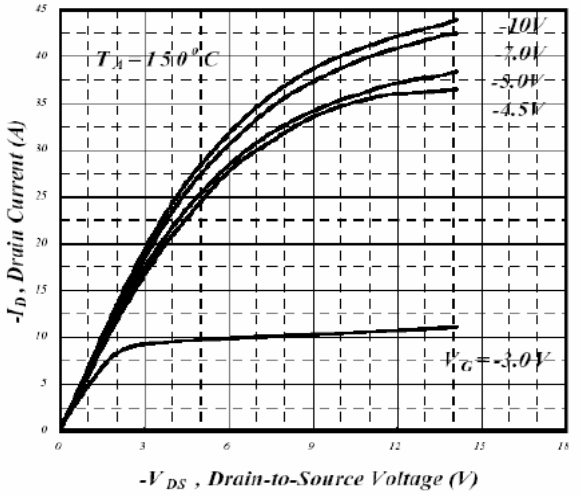


Fig 2. Typical Output Characteristics

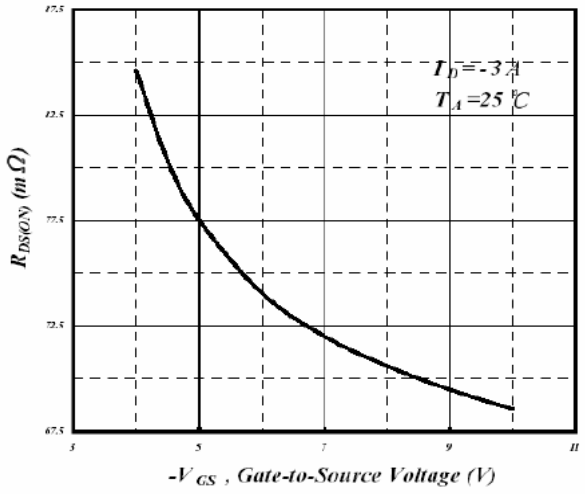


Fig 3. On-Resistance v.s. Gate Voltage

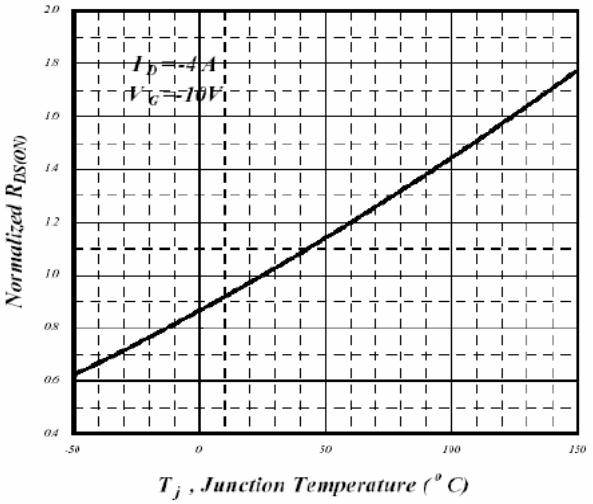


Fig 4. Normalized On-Resistance v.s. Junction Temperature

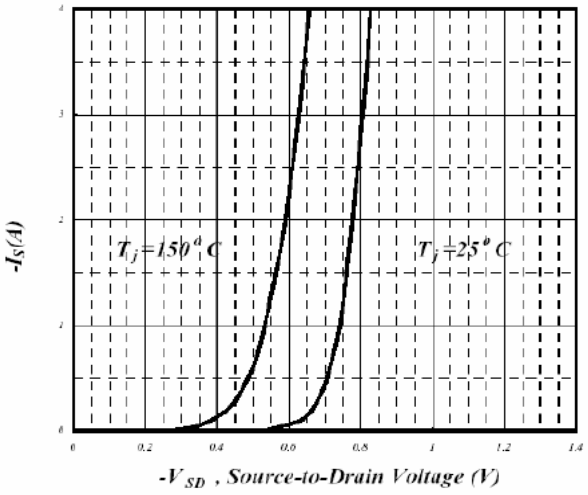


Fig 5. Forward Characteristics of Reverse Diode

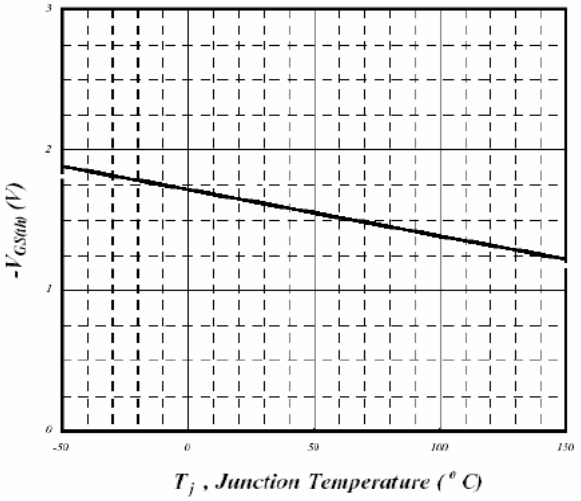


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

Characteristic Curves(Cont.)

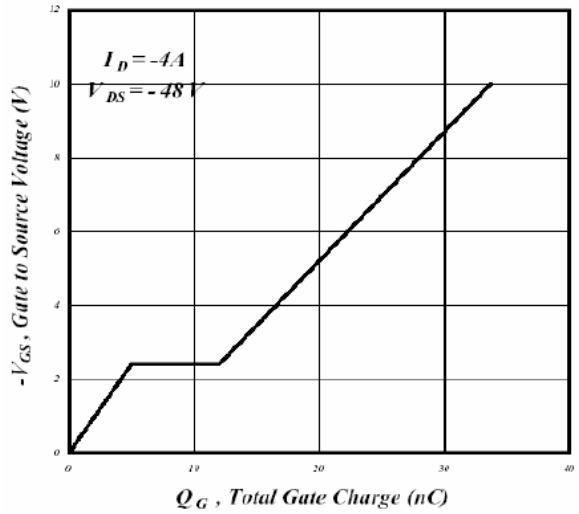


Fig 7. Gate Charge Characteristics

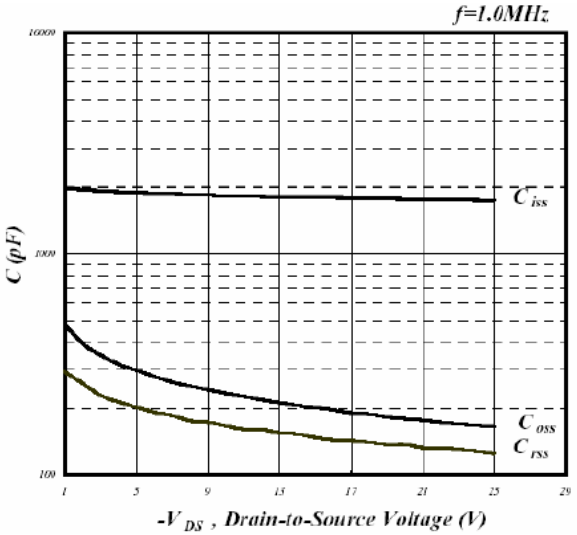


Fig 8. Typical Capacitance Characteristics

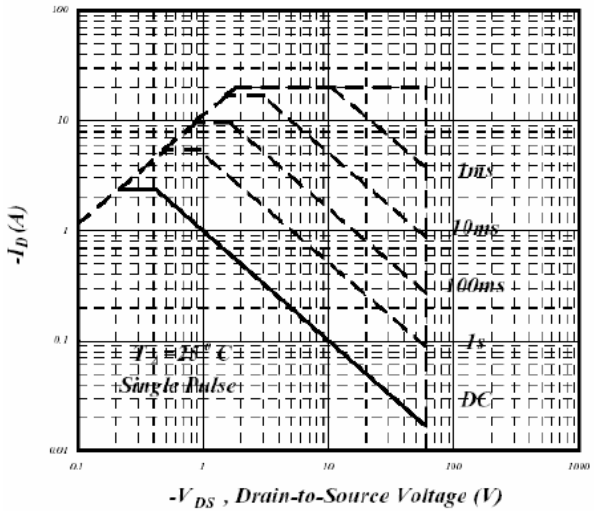


Fig 9. Maximum Safe Operating Area

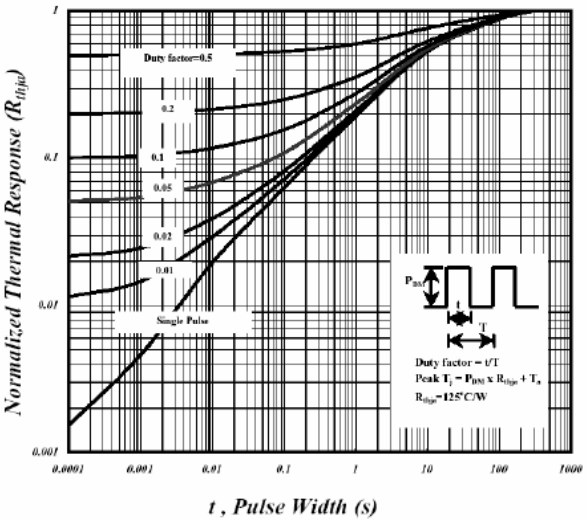


Fig 10. Effective Transient Thermal Impedance

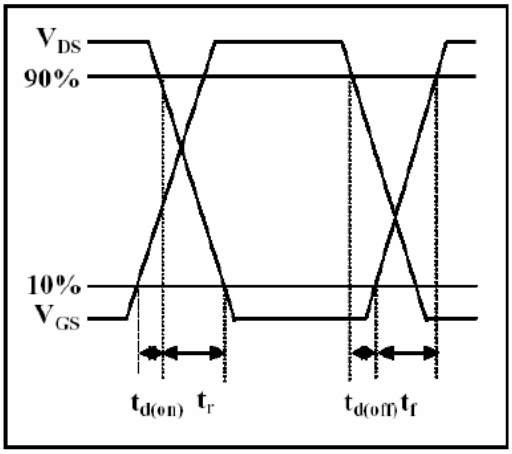


Fig 11. Switching Time Circuit

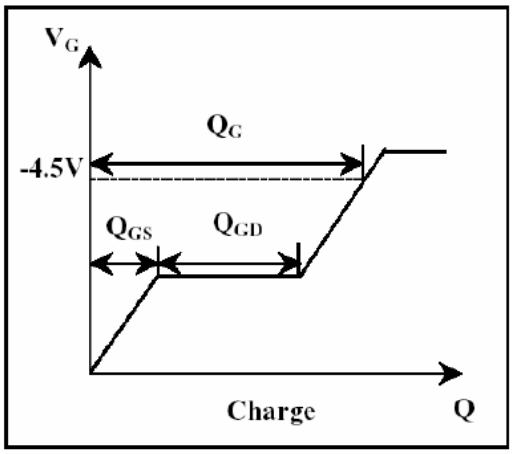
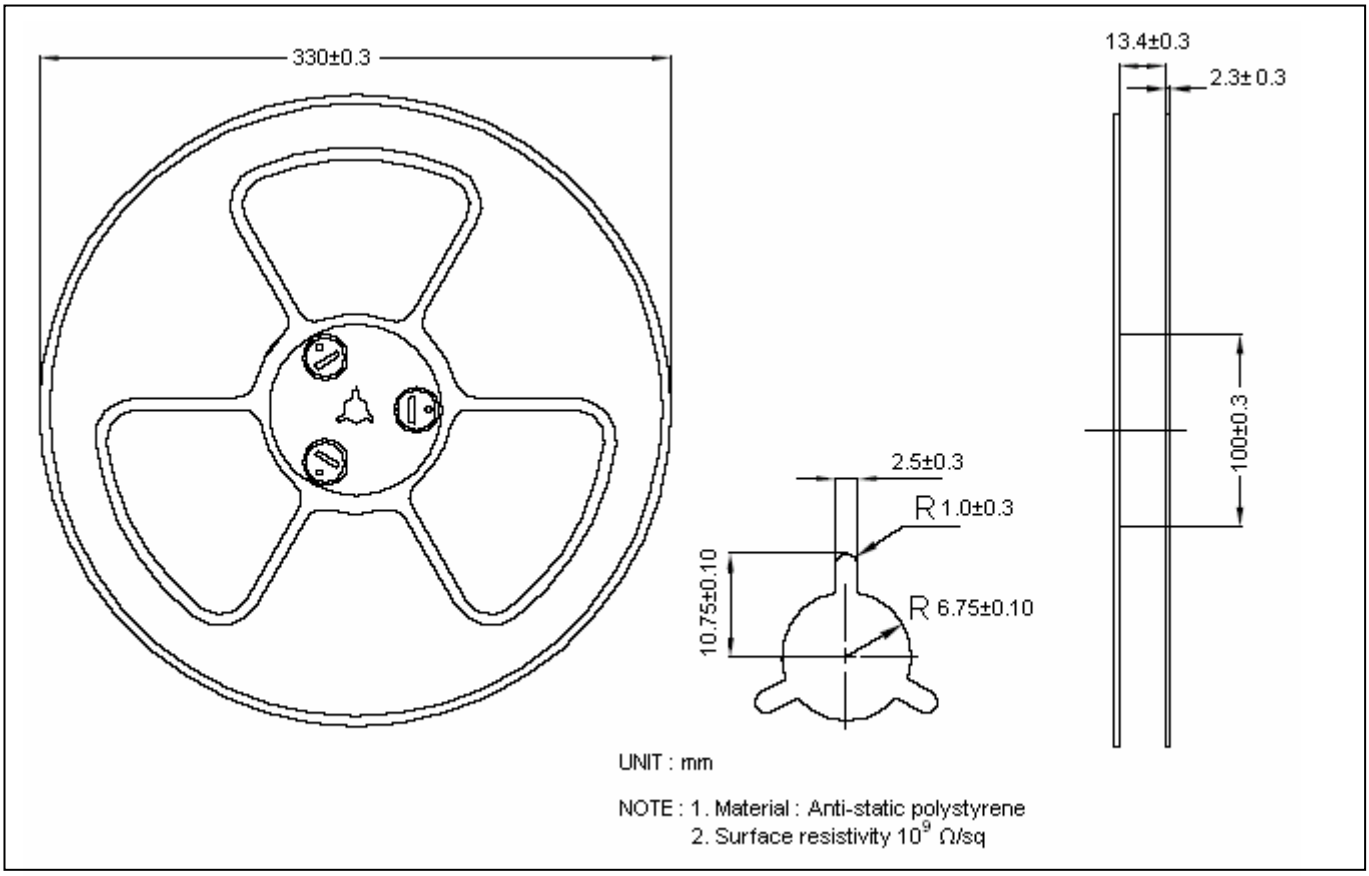
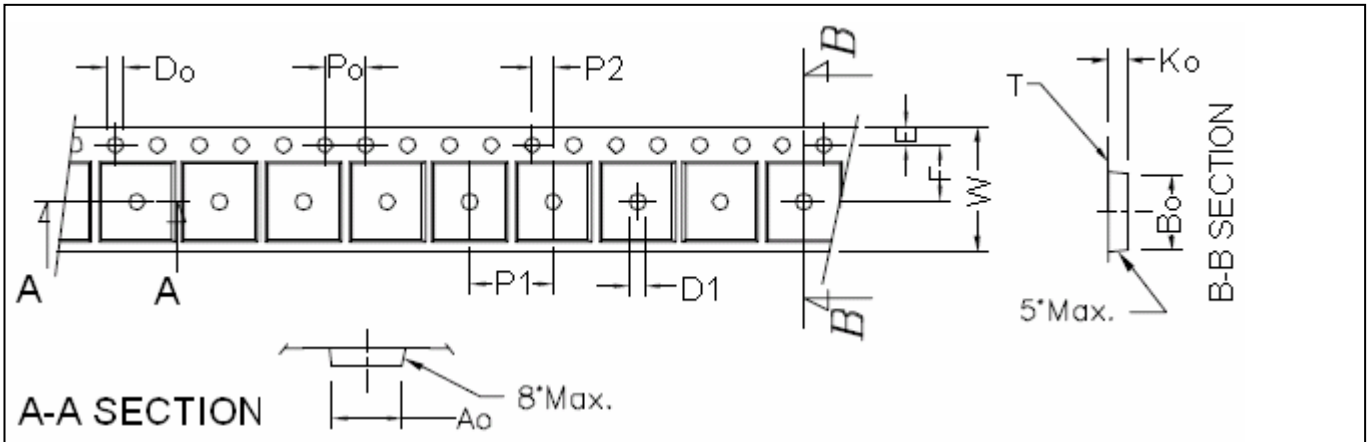


Fig 12. Gate Charge Waveform

Reel Dimension



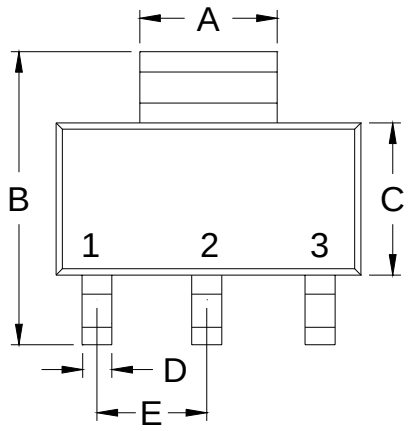
Carrier Tape Dimension

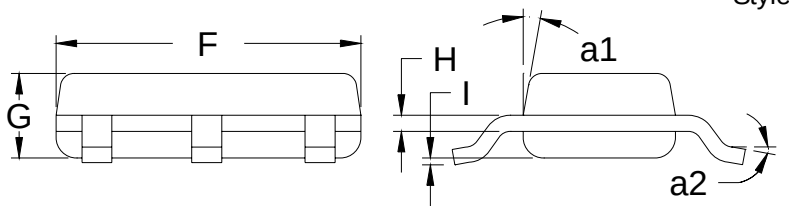


Symbol	Ao	Bo	Ko	Po	P1	P2	T
Spec	6.83±0.1	7.42±0.1	1.88±0.1	4.0±0.1	8.0±0.10	2.0±0.05	0.292±0.02
Symbol	E	F	Do	D1	W	10Po	
Spec	1.75±0.1	5.5±0.05	1.60±0.1	1.5±0.25	$12^{+0.3}_{-0.1}$	40.0±0.2	

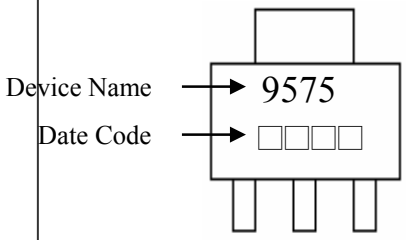
Unit : mm

SOT-223 Dimension





Marking:



Style: Pin 1.Gate 2.Drain 3.Source

3-Lead SOT-223 Plastic
Surface Mounted Package
CYStek Package Code: L3

*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1142	0.1220	2.90	3.10	G	0.0551	0.0709	1.40	1.80
B	0.2638	0.2874	6.70	7.30	H	0.0098	0.0138	0.25	0.35
C	0.1299	0.1457	3.30	3.70	I	0.0008	0.0039	0.02	0.10
D	0.0236	0.0315	0.60	0.80	a1	*13°	-	*13°	-
E	*0.0906	-	*2.30	-	a2	0°	10°	0°	10°
F	0.2480	0.2638	6.30	6.70					

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: 42 Alloy; solder plating
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0