

N-CHANNEL MOSFET

Qualified per MIL-PRF-19500/543

DEVICES

2N6768 2N6768T1

LEVELS

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ABSOLUTE MAXIMUM RATINGS ($T_C = +25^\circ\text{C}$ unless otherwise noted)

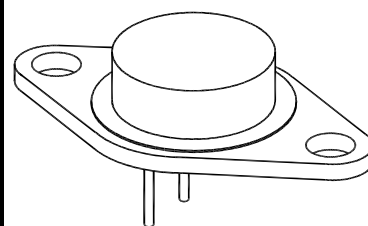
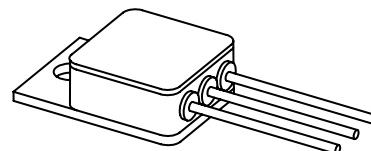
Parameters / Test Conditions	Symbol	Value	Unit
Drain – Source Voltage	V_{DS}	400	Vdc
Gate – Source Voltage	V_{GS}	± 20	Vdc
Continuous Drain Current $T_C = +25^\circ\text{C}$	I_{D1}	14	Adc
Continuous Drain Current $T_C = +100^\circ\text{C}$	I_{D2}	9.0	Adc
Max. Power Dissipation $T_C = +25^\circ\text{C}$	P_{tl}	150 ⁽¹⁾	W
Drain to Source On State Resistance	$R_{ds(on)}$	0.3 ⁽²⁾	Ω
Operating & Storage Temperature	T_{op}, T_{stg}	-55 to +150	$^\circ\text{C}$

Note: (1) Derated Linearly by 1.2 W/ $^\circ\text{C}$ for $T_C > +25^\circ\text{C}$

(2) $V_{GS} = 10\text{Vdc}$, $I_D = 9.0\text{A}$

ELECTRICAL CHARACTERISTICS ($T_A = +25^\circ\text{C}$, unless otherwise noted)

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Drain-Source Breakdown Voltage $V_{GS} = 0\text{V}$, $I_D = 1\text{mA}$	$V_{(BR)DSS}$	400		Vdc
Gate-Source Voltage (Threshold) $V_{DS} \geq V_{GS}$, $I_D = 0.25\text{mA}$ $V_{DS} \geq V_{GS}$, $I_D = 0.25\text{mA}$, $T_j = +125^\circ\text{C}$ $V_{DS} \geq V_{GS}$, $I_D = 0.25\text{mA}$, $T_j = -55^\circ\text{C}$	$V_{GS(th)1}$ $V_{GS(th)2}$ $V_{GS(th)3}$	2.0 1.0	4.0 5.0	Vdc
Gate Current $V_{GS} = \pm 20\text{V}$, $V_{DS} = 0\text{V}$ $V_{GS} = \pm 20\text{V}$, $V_{DS} = 0\text{V}$, $T_j = +125^\circ\text{C}$	I_{GSS1} I_{GSS2}		± 100 ± 200	nAdc
Drain Current $V_{GS} = 0\text{V}$, $V_{DS} = 320\text{V}$ $V_{GS} = 0\text{V}$, $V_{DS} = 400\text{V}$, $T_j = +125^\circ\text{C}$ $V_{GS} = 0\text{V}$, $V_{DS} = 320\text{V}$, $T_j = +125^\circ\text{C}$	I_{DSS1} I_{DSS2} I_{DSS3}		25 1.0 0.25	μAdc mAdc mAdc
Static Drain-Source On-State Resistance $V_{GS} = 10\text{V}$, $I_{D2} = 9\text{A}$ pulsed $V_{GS} = 10\text{V}$, $I_{D1} = 4\text{A}$ pulsed $T_j = +125^\circ\text{C}$ $V_{GS} = 10\text{V}$, $I_{D2} = 9\text{A}$ pulsed	$r_{DS(on)1}$ $r_{DS(on)2}$ $r_{DS(on)3}$		0.3 0.4 0.66	Ω Ω Ω
Diode Forward Voltage $V_{GS} = 0\text{V}$, $I_{D1} = 14\text{A}$ pulsed	V_{SD}		1.7	Vdc


**2N6768
TO-204AA (TO-3)**

2N6768T1 (TO-254AA)

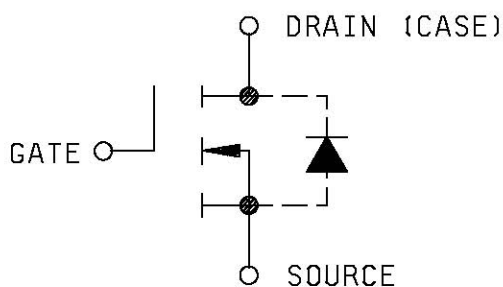
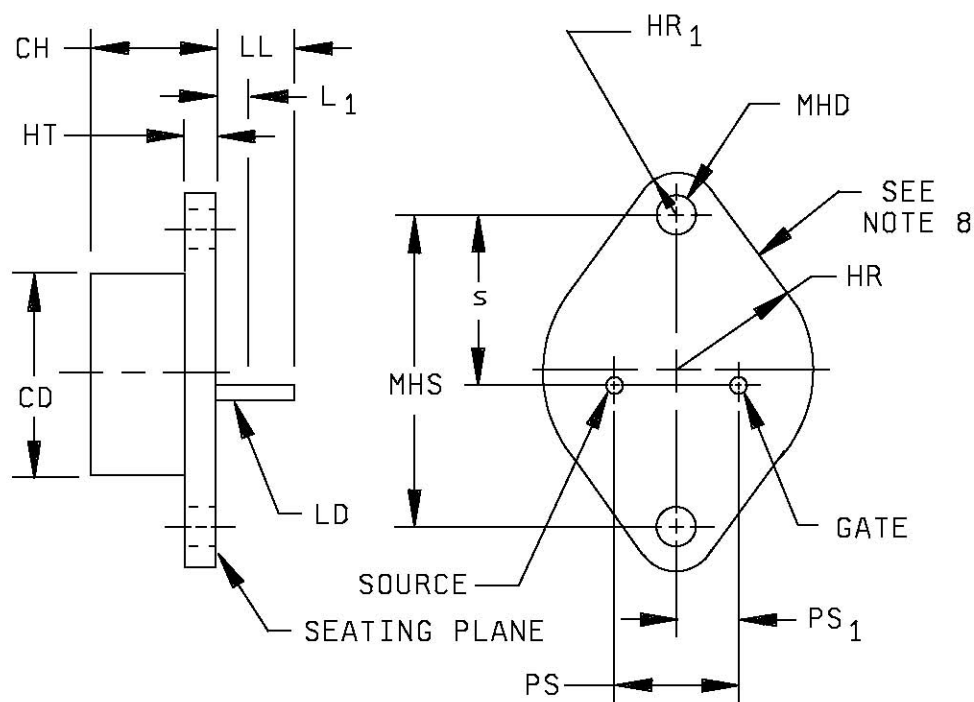
DYNAMIC CHARACTERISTICS

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Gate Charge:				
On-State Gate Charge	$Q_{g(on)}$		110	nC
Gate to Source Charge	Q_{gs}		18	
Gate to Drain Charge	Q_{gd}		65	
$V_{GS} = 10V, I_D = 14A$ $V_{DS} = 50V$				

SWITCHING CHARACTERISTICS

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Switching time tests:				
Turn-on delay time	$t_{d(on)}$		35	ns
Rinse time	t_r		190	
Turn-off delay time	$t_{d(off)}$		170	
Fall time	t_f		130	
$I_D = 14A, V_{GS} = 10Vdc$ Gate drive impedance = 2.35Ω , $V_{DD} = 200Vdc$				
Diode Reverse Recovery Time	t_{rr}		1200	ns
$di/dt \leq 100A/\mu s, V_{DD} \leq 30V, I_F = 14A$				

PACKAGE DIMENSIONS



CIRCUIT SCHEMATIC

PACKAGE DIMENSIONS

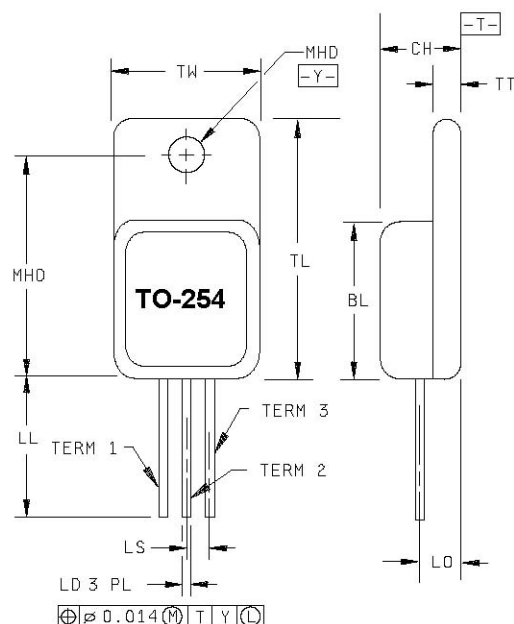
Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD		.875		22.23	
CH	.250	.360	6.35	9.15	
HR	.495	.525	12.57	13.3	
HR ₁	.131	.188	3.33	4.78	
HT	.060	.135	1.52	3.43	
LD	.057	.063	1.45	1.60	5
	.038	.043	0.97	1.10	6
LL	.312	.500	7.92	12.70	
L ₁		.050		1.27	3
MHD	.151	.161	3.84	4.09	7
MHS	1.177	1.197	29.90	30.40	
PS	.420	.440	10.67	11.18	
PS ₁	.205	.225	5.21	5.72	
S	.655	.675	16.64	17.15	

NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. These dimensions shall be measured at points .050 inch (1.27 mm) and .055 inch (1.40 mm) below the seating plane. When gauge is not used, measurement will be made at the seating plane.
4. The seating plane of the header shall be flat within .001 inch (0.03 mm) concave to .004 inch (0.10 mm) convex inside a .930 inch (23.62 mm) diameter circle on the center of the header and flat within .001 inch (0.03 mm) concave to .006 inch (0.15 mm) convex overall.
5. These dimensions pertain to the 2N6764 and 2N6766 types.
6. These dimensions pertain to the 2N6768 and 2N6770 types.
7. Mounting holes shall be deburred on the seating plane side.
8. Drain is electrically connected to the case.
9. In accordance with ASME Y14.5M, diameters are equivalent to ϕ x symbology.

FIGURE 1. Physical dimensions of transistor types 2N6764 and 2N6766 TO-204AE;
for types 2N6768 and 2N6770, TO-204AA

PACKAGE DIMENSIONS



	Dimensions				
Ltr	Inches		Millimeters		Notes
	Min	Max	Min	Max	
BL	.535	.545	13.59	13.84	
CH	.249	.260	6.32	6.60	
LD	.035	.045	0.89	1.14	
LL	.510	.570	12.95	14.48	
LO	.150 BSC		3.81 BSC		3, 4
LS	.150 BSC		3.81 BSC		
MHD	.139	.149	3.53	3.78	
MHO	.665	.685	16.89	17.40	
TL	.790	.800	20.07	20.32	
TT	.040	.050	1.02	1.27	
TW	.535	.545	13.59	13.84	
Term 1	Drain				
Term 2	Source				
Term 3	Gate				

NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. Protrusion thickness of ceramic eyelets included in dimension LL.
4. All terminals are isolated from case.
5. In accordance with ASME Y14.5M, diameters are equivalent to ϕx symbology.

FIGURE 2. Physical dimensions for 2N6764T1, 2N6766T1, 2N6768T1, and 2N6770T1 (TO-254AA).