

# 2N6764

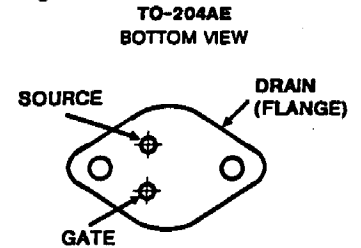
## N-Channel Enhancement-Mode Power MOS Field-Effect Transistors

Absolute Maximum Ratings ( $T_C = +25^\circ\text{C}$ ) Unless Otherwise Specified

	2N6764	UNITS
Drain-Source Voltage	100*	V
Drain-Gate Voltage ( $R_{GS} = 20k\Omega$ )	100*	V
Continuous Drain Current		
$T_C = +25^\circ\text{C}$	38	A
$T_C = +100^\circ\text{C}$	24	A
Pulsed Drain Current	70	A
Gate-Source Voltage	$\pm 20^*$	V
Maximum Power Dissipation		
$T_C = +25^\circ\text{C}$ (See Figure 11)	150*	W
$T_C = +100^\circ\text{C}$ (See Figure 11)	60*	W
Linear Derating Factor (See Figure 11)	1.2	W/ $^\circ\text{C}$
Inductive Current, Clamped	70	A
(See Figures 1 and 2, $L = 100\mu\text{H}$ )		
Operating and Storage Junction Temperature Range	-55 to +150*	$^\circ\text{C}$
Maximum Lead Temperature for Soldering	300*	$^\circ\text{C}$
(0.083" (1.6mm) from case for 10s)		

\*JEDEC registered values

### Package



### ELECTRICAL CHARACTERISTICS @ $T_C = 25^\circ\text{C}$ (Unless Otherwise Specified)

Parameter	Type	Min.	Typ.	Max.	Units	Test Conditions
$BV_{DSS}$ Drain - Source Breakdown Voltage						$V_{GS} = 0$
	2N6764	100	-	-	V	$I_D = 1.0 \text{ mA}$
$V_{GS(th)}$ Gate Threshold Voltage	ALL	2.0*	-	4.0*	V	$V_{DS} = V_{GS}, I_D = 1 \text{ mA}$
$I_{GSSF}$ Gate - Body Leakage Forward	ALL	-	-	100*	nA	$V_{GS} = 20\text{V}$
$I_{GSSR}$ Gate - Body Leakage Reverse	ALL	-	-	100*	nA	$V_{GS} = -20\text{V}$
$I_{DSS}$ Zero Gate Voltage Drain Current	ALL	-	0.1	1.0*	mA	$V_{DS} = \text{Max. Rating}, V_{GS} = 0$
		-	0.2	4.0*	mA	$V_{DS} = \text{Max. Rating}, V_{GS} = 0, T_C = 125^\circ\text{C}$
$V_{DS(on)}$ Static Drain-Source On-State Voltage	2N6764	-	-	2.09*	V	$V_{GS} = 10\text{V}, I_D = 38\text{A}$
$R_{DS(on)}$ Static Drain-Source On-State Resistance						
	2N6764	-	0.045	0.055*	$\Omega$	$V_{GS} = 10\text{V}, I_D = 24\text{A}$
$R_{DS(on)}$ Static Drain-Source On-State Resistance						
	2N6764	-	-	0.094*	$\Omega$	$V_{GS} = 10\text{V}, I_D = 24\text{A}, T_C = 125^\circ\text{C}$
$g_{fs}$ Forward Transconductance	ALL	9.0*	12.5	27*	S (U)	$V_{DS} = 15\text{V}, I_D = 24\text{A}$
$C_{iss}$ Input Capacitance	ALL	1000*	2000	3000*	pF	$V_{GS} = 0, V_{DS} = 25\text{V}, f = 1.0 \text{ MHz}$
$C_{oss}$ Output Capacitance	ALL	500*	1000	1500*	pF	See Fig. 10
$C_{riss}$ Reverse Transfer Capacitance	ALL	150*	350	500*	pF	
$t_d(on)$ Turn-On Delay Time	ALL	-	-	35*	ns	$V_{DD} \approx 24\text{V}, I_D = 24\text{A}, Z_\theta = 4.7\Omega$
$t_r$ Rise Time	ALL	-	-	100*	ns	(See Figs. 13 and 14)
$t_d(off)$ Turn-Off Delay Time	ALL	-	-	125*	ns	(MOSFET switching times are essentially independent of operating temperature.)
$t_f$ Fall Time	ALL	-	-	100*	ns	

### THERMAL RESISTANCE

Parameter	Type	Min.	Typ.	Max.	Units	Notes
$R_{thJC}$ Junction-to-Case	ALL	-	-	0.83*	$^\circ\text{C/W}$	
$R_{thCS}$ Case-to-Sink	ALL	-	0.1	-	$^\circ\text{C/W}$	Mounting surface flat, smooth, and greased.
$R_{thJA}$ Junction-to-Ambient	ALL	-	-	30	$^\circ\text{C/W}$	Free Air Operation

### BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

Parameter	Type	Min.	Typ.	Max.	Units	Test Conditions
$I_S$ Continuous Source Current (Body Diode)					A	Modified MOSFET symbol showing the integral reverse P-N junction rectifier.
	2N6764	-	-	38*		
$I_{SM}$ Pulsed Source Current (Body Diode)					A	
	2N6764	-	-	70		
$V_{SD}$ Diode Forward Voltage					V	$T_C = 25^\circ\text{C}, I_S = 31\text{A}, V_{GS} = 0$
	2N6764	0.90*	-	1.8*		
$V_{SD}$ Diode Forward Voltage					V	$T_C = 25^\circ\text{C}, I_S = 38\text{A}, V_{GS} = 0$
	2N6764	-	-	-		
$t_{rr}$ Reverse Recovery Time	ALL	-	500	-	ns	$T_J = 150^\circ\text{C}, I_F = I_{SM}, di_F/dt = 100 \text{ A}/\mu\text{s}$
$Q_{RR}$ Reverse Recovered Charge	ALL	-	10	-	$\mu\text{C}$	$T_J = 150^\circ\text{C}, I_F = I_{SM}, di_F/dt = 100 \text{ A}/\mu\text{s}$

\*JEDEC registered values. ① Pulse Test: Pulse Width  $\leq 300 \mu\text{sec}$ . Duty Cycle  $\leq 2\%$