

**2N6755 ■ 2N6756**

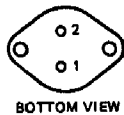
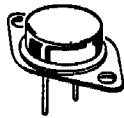
**N-Channel Enhancement Mode  
 MOSPOWER**

**APPLICATIONS**

- Switching Regulators
- Converters
- Motor Drivers

**PRODUCT SUMMARY**

Part Number	BV <sub>DSS</sub> Volts	r <sub>DS(ON)</sub> (ohms)
2N6755	60	0.25
2N6756	100	0.18



PIN 1 - Gate  
 PIN 2 - Source  
 CASE - Drain

BOTTOM VIEW

(T0-3)

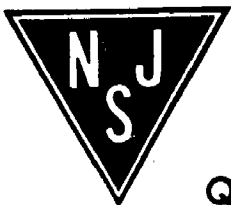
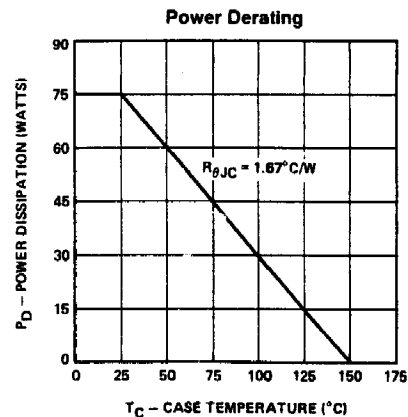
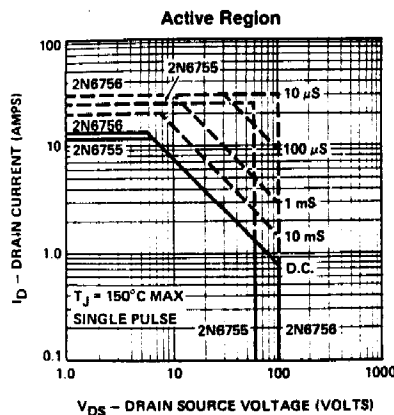
**ABSOLUTE MAXIMUM RATINGS (T<sub>C</sub> = 25° C unless otherwise noted)**

Parameter	2N6755	2N6756	Units
V <sub>DS</sub> Drain-Source Voltage	60*	100*	V
V <sub>DGR</sub> Drain-Gate Voltage (R <sub>GS</sub> = 1 MΩ)	60*	100*	V
I <sub>D</sub> @ T <sub>C</sub> = 25° C Continuous Drain Current	±12*	±14*	A
I <sub>D</sub> @ T <sub>C</sub> = 100° C Continuous Drain Current	±8*	±9*	A
I <sub>DM</sub> Pulsed Drain Current <sup>1</sup>	±25	±30	A
V <sub>GS</sub> Gate-Source Voltage <sup>2</sup>	±40	±40	V
P <sub>D</sub> @ T <sub>C</sub> = 25° C Max. Power Dissipation	75*	75*	W
P <sub>D</sub> @ T <sub>C</sub> = 100° C Max. Power Dissipation	30*	30*	W
Junction to Case Linear Derating Factor	0.6*	0.6*	W/° C
Junction to Ambient Linear Derating Factor	0.033	0.033	W/° C
T <sub>J</sub> Operating and Storage Temperature Range	-55 To 150*	-55 To 150*	° C
Lead Temperature (1/16" from case for 10 secs.)	300*	300*	° C

<sup>1</sup> Pulse Test: Pulsewidth < 300μsec, Duty Cycle < 2%

<sup>2</sup> Exceeds Jecdec Values

\* Jecdec Registered Values



## ELECTRICAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$ unless otherwise noted)

### STATIC

Parameter		Type	Min.	Typ.	Max.	Units	Test Conditions
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	2N6755	60			V	$V_{GS} = 0$ $I_D = 1\text{ mA}$
		2N6756	100			V	
V <sub>GS(th)</sub>	Gate-Threshold Voltage	All	2.0*		4.0*	V	$V_{DS} = V_{GS}, I_D = 1\text{ mA}$
I <sub>GSSF</sub>	Gate-Body Leakage Forward	All			100*	nA	$V_{GS} = 20\text{V}$
I <sub>GSSR</sub>	Gate-Body Leakage Reverse	All			-100*	nA	$V_{GS} = -20\text{V}$
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	All		0.1	1.0*	mA	$V_{DS} = \text{Max. Rating}, V_{GS} = 0$
		All		0.2	4.0*	mA	$V_{DS} = \text{Max. Rating}, V_{GS} = 0$ $T_C = 125^\circ\text{C}$
I <sub>D(on)</sub>	On-State Drain Current <sup>1</sup>	2N6755	12			A	$V_{GS} = 10\text{V}, V_{DS} = 15\text{V}$
		2N6756	14			A	$V_{GS} = 10\text{V}, V_{DS} = 15\text{V}$
V <sub>DS(on)</sub>	Static Drain-Source On-State Voltage <sup>1</sup>	2N6755			3.0*	V	$V_{GS} = 10\text{V}, I_D = 12\text{A}$
		2N6756			2.52*	V	$V_{GS} = 10\text{V}, I_D = 14\text{A}$
R <sub>DS(on)</sub>	Static Drain-Source On-State Resistance <sup>1</sup>	2N6755		0.2	0.25*	$\Omega$	$V_{GS} = 10\text{V}, I_D = 8.0\text{A}$
		2N6756		0.14	0.18*	$\Omega$	$V_{GS} = 10\text{V}, I_D = 9.0\text{A}$
R <sub>DS(on)</sub>	Static Drain-Source On-State Resistance <sup>1</sup>	2N6755			0.45*	$\Omega$	$V_{GS} = 10\text{V}, I_D = 8.0\text{A}, T_C = 125^\circ\text{C}$
		2N6756			0.33*	$\Omega$	$V_{GS} = 10\text{V}, I_D = 9.0\text{A}, T_C = 125^\circ\text{C}$


### DYNAMIC

g <sub>fs</sub>	Forward Transconductance <sup>1</sup>	All	4.0*	5.5	12.0*	S (V)	$V_{DS} = 15\text{V}, I_D = 9.0\text{A}$
C <sub>iss</sub>	Input Capacitance	All	350*	600	800*	pF	$V_{GS} = 0, V_{DS} = 25\text{V}$ $f = 1\text{ MHz}$
C <sub>oss</sub>	Output Capacitance	All	150*	300	500*	pF	
C <sub>rss</sub>	Reverse Transfer Capacitance	All	50*	100	150*	pF	
t <sub>d(on)</sub>	Turn-On Delay Time	All			30*	ns	
t <sub>r</sub>	Rise Time	All			75*	ns	$V_{DD} = 36\text{V}, I_D \geq 9.0\text{A}$ $R_g = 7.5\Omega, R_L = 4.0\Omega$ (MOSFET switching times are essentially independent of operating temperature.)
t <sub>d(off)</sub>	Turn-Off Delay Time	All			40*	ns	
t <sub>f</sub>	Fall Time	All			45*	ns	

### THERMAL RESISTANCE

R <sub>thJC</sub>	Junction-to-Case	All			1.67*	$^\circ\text{C/W}$	
R <sub>thJA</sub>	Junction-to-Ambient	All			30	$^\circ\text{C/W}$	Free Air Operation

### BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

I <sub>S</sub>	Continuous Source Current (Body Diode)	2N6755			-12*	A	Modified MOSPOWER symbol showing the integral P-N Junction rectifier 
		2N6756			-14*	A	
I <sub>SM</sub>	Source Current <sup>1</sup> (Body Diode)	2N6755			-25	A	
		2N6756			-30	A	
V <sub>SD</sub>	Diode Forward Voltage <sup>1</sup>	2N6755	-0.85*		-1.7*	V	$T_C = 25^\circ\text{C}, I_S = -12\text{A}, V_{GS} = 0$
		2N6756	-0.9*		-1.8*	V	$T_C = 25^\circ\text{C}, I_S = 14\text{A}, V_{GS} = 0$
t <sub>rr</sub>	Reverse Recovery Time	All		300		ns	$T_J = 150^\circ\text{C}, I_F = I_S,$ $dI_F/dt = 100\text{ A}/\mu\text{s}$

<sup>1</sup> Pulse Test: Pulse Width < 300  $\mu\text{sec}$ , Duty Cycle < 2%  
\* JEDEC Registered Values

Data Sheet Curves: VNDE10