New Jersey Semi-Conductor Products, Inc.

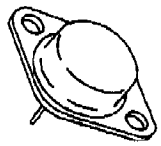
20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8960

2N6765/2N6766
N-Channel Power MOSFETs, 30 A, 150 V/200 V

Description
These devices are n-channel, enhancement mode, power MOSFETs designed especially for high power, high speed applications, such as switching power supplies, UPS, AC and DC motor controls, relay and solenoid driver and high energy pulse circuits.

- V_{GS} Rated at ±20 V
- Silicon Gate for Fast Switching Speeds
- I_{DSS}, $R_{DS(on)}$ Specified at Elevated Temperature
- Rugged
- Low Drive Requirements
- Ease of Paralleling



2N6765
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Maximum Ratings

Symbol	Characteristic	Rating 2N6766	Rating 2N6765	Unit
V_{DSS}	Drain to Source Voltage	200	150	V
V_{DGR}	Drain to Gate Voltage R_{GS} = 1 MΩ	200	150	V
V_{GS}	Gate to Source Voltage	±20	±20	V
T_J, T_{stg}	Operating Junction and Storage Temperatures	-55 to +150	-55 to +150	°C
T_L	Maximum Lead Temperature for Soldering Purposes, 1/16" From Case for 10 s	300	300	°C
Maximum On-State Characteristics				
$R_{DS(on)}$	Static Drain-to-Source On Resistance	0.085	0.12	Ω
I_D	Drain Current			A
	Continuous at T_C = 25°C	30	25	
	Continuous at T_C = 100°C	19	16	
I_{DM}	Pulsed	60[2]	50[2]	
Maximum Thermal Characteristics				
$R_{\theta JC}$	Thermal Resistance, Junction to Case	0.83	0.83	°C/W
P_D	Total Power Dissipation			W
	at T_C = 25°C	150	150	
	at T_C = 100°C	60	60	
	Linear Derating Factor	1.2	1.2	W/°C

Electrical Characteristics (T_C = 25°C unless otherwise noted)

Symbol	Characteristic	Min	Max	Unit	Test Conditions
Off Characteristics					
$V_{(BR)DSS}$	Drain Source Breakdown Voltage			V	V_{GS} = 0 V, I_D = 1.0 mA
	2N6766	200[2]			
	2N6765	150[2]			
I_{DSS}	Zero Gate Voltage Drain Current		1	mA	V_{DS} = Rated V_{DSS}, V_{GS} = 0 V
			4		V_{DS} = Rated V_{DSS}, V_{GS} = 0 V, T_C = 125°C
I_{GSS}	Gate-Body Leakage Current		±100	nA	V_{GS} = ±20 V, V_{DS} = 0 V
On Characteristics					
$V_{GS(th)}$	Gate Threshold Voltage	2.0	4.0	V	I_D = 1.0 mA, V_{DS} = V_{GS}
$R_{DS(on)}$	Static Drain-Source On-Resistance[1]			Ω	V_{GS} = 10 V,
	2N6766		0.085		I_D = 19 A
	2N6765		0.12		I_D = 16 A
	2N6766		0.153		I_D = 19 A, T_C = 125°C
	2N6765		0.216		I_D = 16 A, T_C = 125°C
$V_{DS(on)}$	Drain-Source On-Voltage[1]			V	V_{GS} = 10 V
	2N6766		2.7		I_D = 30 A
	2N6765		3.0		I_D = 25 A
g_{fs}	Forward Transconductance[1]	9.0	27	S (℧)	V_{DS} = 15 V, I_D = 19 A
Dynamic Characteristics					
C_{iss}	Input Capacitance	1000	3000	pF	V_{DS} = 25 V, V_{GS} = 0 V f = 1.0 MHz
C_{oss}	Output Capacitance	460	1200	pF	
C_{rss}	Reverse Transfer Capacitance	150	500	pF	
Switching Characteristics (T_C = 25°C, *Figures 9, 10*)					
$t_{d(on)}$	Turn-On Delay Time		35	ns	V_{DD} = 95 V, I_D = 19 A V_{GS} = 10 V, R_{GEN} = 4.7 Ω R_{GS} = 4.7 Ω
t_r	Rise Time		100	ns	
$t_{d(off)}$	Turn-Off Delay Time		125	ns	
t_f	Fall Time		100	ns	
Q_g	Total Gate Charge		120[2]	nC	V_{GS} = 10 V, I_D = 38 A V_{DD} = 100 V

Electrical Characteristics (Cont.) (T_C = 25°C unless otherwise noted)

Symbol	Characteristic	Min	Typ	Max	Unit	Test Conditions
Source-Drain Diode Characteristics						
I_S	Continuous Source Current				A	
	2N6766			30		
	2N6765			25		
I_{SM}	Pulsed Source Current				A	
	2N6766			60[2]		
	2N6765			50[2]		
V_{SD}	Diode Forward Voltage				V	V_{GS} = 0 V
	2N6766	0.9		1.8		I_S = 30 A
	2N6765	0.85		1.7		I_S = 25 A
t_{rr}	Reverse Recovery Time		500[2]		ns	V_{GS} = 0 V, T_J = 150°C I_F = I_{SM}, dI_F/dt = 100 A/μs
Q_{RR}	Reverse Recovery Charge		10[2]		μC	V_{GS} = 0 V, T_J = 150°C I_F = I_{SM}, dI_F/dt = 100 A/μs