Micro Commercial Components
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MCD02N60

N-Channel Enhancement Mode Field Effect Transistor

Features

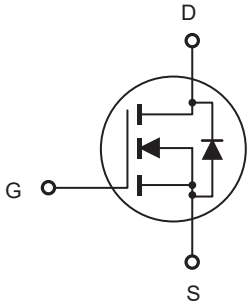
- Excellent stability and uniformity
- Extremely Low switching loss
- Lower $R_{dS(ON)}$
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

Maximum Ratings @ 25°C Unless Otherwise Specified

Symbol	Parameter	Rating	Unit
V_{DS}	Drain-source Voltage	600	V
I_D	Drain Current-Continuous(1)	2.0	A
I_D	Drain Current-Continuous@Tj=100°C (1)	1.25	A
$I_{D\ (pulse)}$	Drain Current-Pulsed(2)	6.0	A
V_{GSS}	Gate-source Voltage	±30	V
E_{AS}	Single Pulsed Avalanche Energy(4)	60	mJ
P_D	Power Dissipation(3)	18	W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient(5)	62	℃/W
T_J	Operating Junction Temperature	-55 to +150	℃
T_{STG}	Storage Temperature	-55 to +150	℃

1) Calculated continuous current based on maximum allowable junction temperature.
2) Repetitive rating; pulse width limited by max. junction temperature.
3) Pd is based on max. junction temperature, using junction-case thermal resistance.
4) VDD=50 V, RG=25 Ω, L=20 mH, starting Tj=25 °C
5) The value of RθJA is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T_a=25 °C.

Internal Block Diagram



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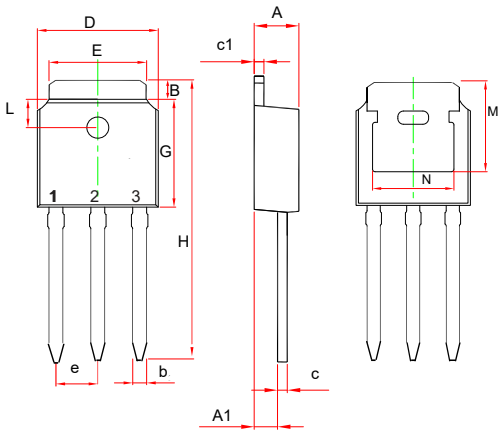

1.GATE
2.DRAIN
3.SOURCE

DIMENSIONS					
DIM	INCHES MIN	INCHES MAX	MM MIN	MM MAX	NOTE
A	.087	.094	2.20	2.40	
A1	.038	.054	0.97	1.17	
B	.035	.050	0.88	1.28	
b	.027	.035	0.68	0.90	
c	.017	.025	0.43	0.63	
c1	.017	.025	0.43	0.63	
D	.252	.268	6.40	6.80	
E	.205	.217	5.20	5.50	
G	.235	.245	5.98	6.22	
e	0.090BSC		2.286BSC		
H	.639	.662	16.22	16.82	
L	.065	.077	1.65	1.95	
M	0.209REF		5.30REF		
N	.182	---	4.63	---	

Electrical characteristics (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Drain-source breakdown voltage	BV_{DSS}	600			V	V_{GS}=0 V, I_D=250 μA
		650	750			V_{GS}=0 V, I_D=250 μA T_j=150 ℃
Gate threshold voltage	$V_{GS(th)}$	2.0		4.0	V	V_{DS}=V_{GS}, I_D=250 μA
Drain-source on-state resistance	$R_{DS(ON)}$		1.9	2.2	Ω	V_{GS}=10 V, I_D=1 A
			4.8			V_{GS}=10 V, I_D=1 A, T_j=150 ℃
Gate-source leakage current	I_{GSS}			100	nA	V_{GS}=30 V
				-100		V_{GS}=-30 V
Drain-source leakage current	I_{DSS}			1	μA	V_{DS}=600 V, V_{GS}=0 V
Dynamic Characteristics						
Input capacitance	C_{iss}		118		pF	V_{GS}=0 V, V_{DS}=50 V, f=1 MHz
Output capacitance	C_{oss}		12.5		pF	
Reverse transfer capacitance	C_{rss}		0.76		pF	
Turn-on delay time	$t_{d(on)}$		50.4		ns	V_{GS}=10 V, V_{DS}=380 V, R_G=25 Ω, I_D=2 A
Rise time	t_r		23.9		ns	
Turn-off delay time	$t_{d(off)}$		103.1		ns	
Fall time	t_f		44.7		ns	
Gate Charge Characteristics						
Total gate charge	Q_g		5.1		nC	I_D=2 A, V_{DS}=480 V, V_{GS}=10 V
Gate-source charge	Q_{gs}		1		nC	
Gate-drain charge	Q_{gd}		2.3		nC	
Gate plateau voltage	$V_{plateau}$		5.4		V	
Body Diode Characteristics						
Diode forward current	I_S			2	A	V_{GS}<V_{th}
Pulsed source current	I_{SP}			6		
Diode forward voltage	V_{SD}			1.4	V	I_S=2 A, V_{GS}=0 V
Reverse recovery time	t_{rr}		153.9		ns	V_R=400 V, I_S=2 A, di/dt=100 A/μs
Reverse recovery charge	Q_{rr}		0.617		μC	
Peak reverse recovery current	I_{rrm}		8.7		A	

■ Electrical Characteristics Diagrams

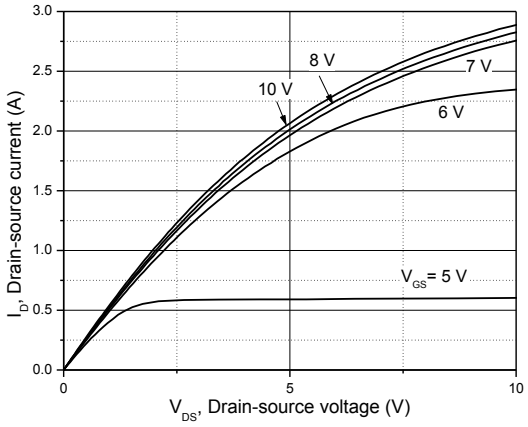

Figure 1, Typ. output characteristics

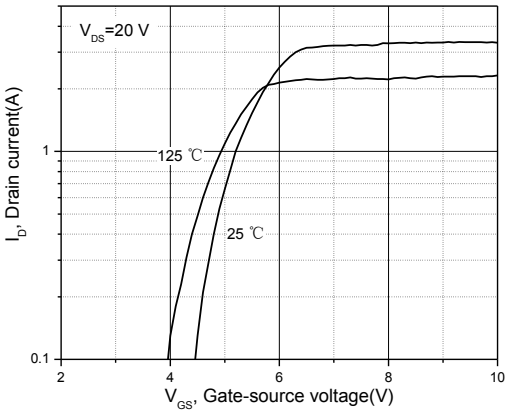

Figure 2, Typ. transfer characteristics

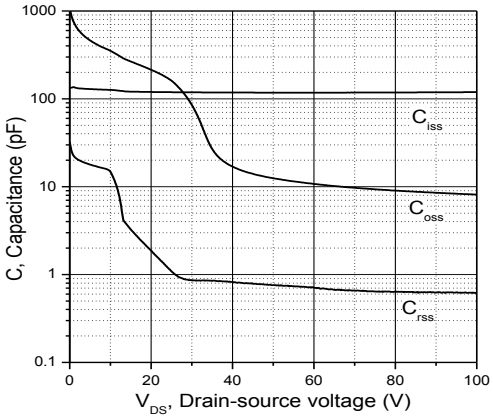

Figure 3, Typ. capacitances

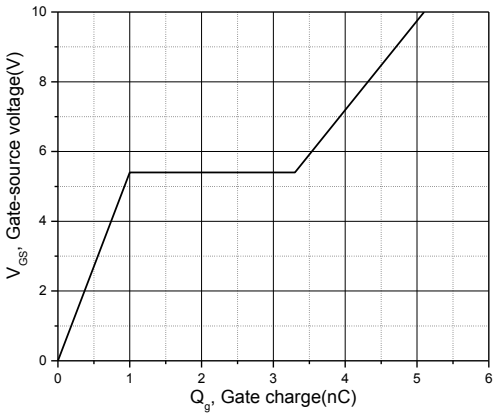

Figure 4, Typ. gate charge

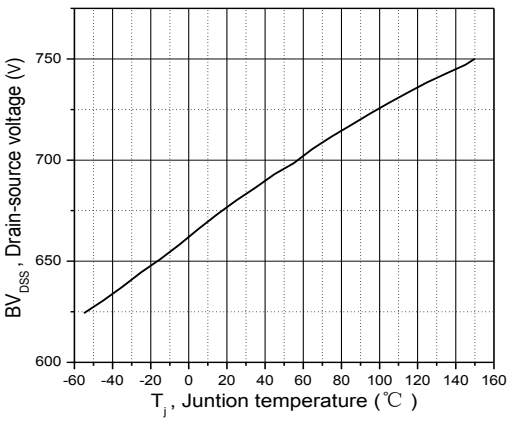

Figure 5, Drain-source breakdown voltage

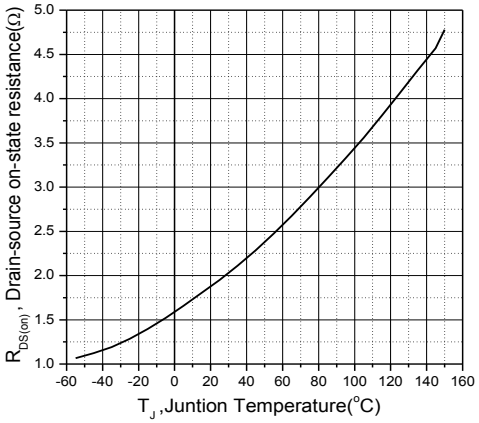

Figure 6, Drain-source on-state resistance

■ Electrical Characteristics Diagrams

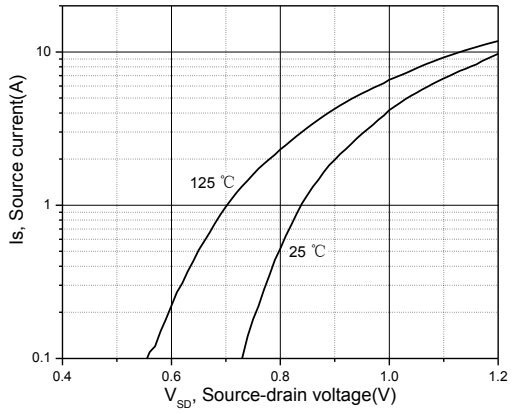

Figure 7, Forward characteristic of body diode

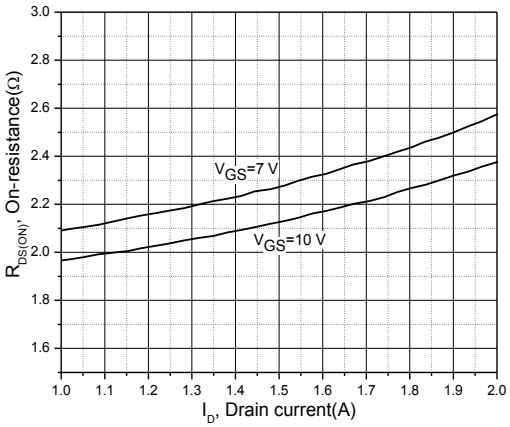

Figure 8, Drain-source on-state resistance

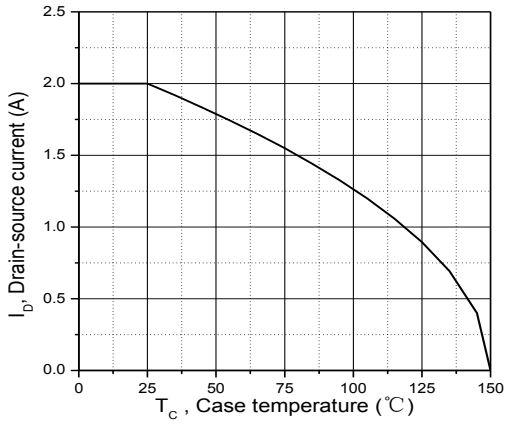

Figure 9, Drain current

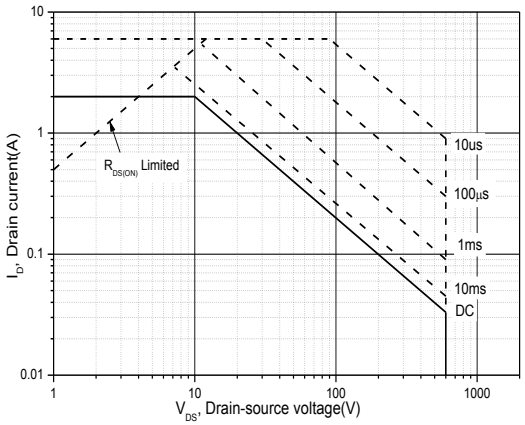

Figure 10, Safe operation area for T_C=25 ℃

Micro Commercial Components

Ordering Information :

Device	Packing
Part Number-BP	Bulk:29.7Kpcs/Carton

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