

Features

- Optimized Body Diode Reverse Recovery Performance
- Low On-resistance and Low Conduction Losses
- Ultra Low Gate Charge Cause Lower Driving Requirement
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

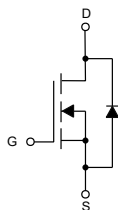
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 0.83°C/W Junction to Case

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	V_{DS}	650	V	
Gate-Source Voltage	V_{GS}	±30	V	
Continuous Drain Current	I_D	$T_C=25^\circ\text{C}$	20	A
		$T_C=100^\circ\text{C}$	12	A
Pulsed Drain Current ^(Note 1)	I_{DM}	60	A	
Single Pulse Avalanche Energy ^(Note 2)	E_{AS}	484	mJ	
Repetitive Avalanche Energy	E_{AR}	0.7	mJ	
Avalanche Current	I_{AR}	3.5	A	
Total Power Dissipation	P_D	151	W	

Note:

- 1.Repetitive Rating; Pulse Width Limited by Maximum Junction Temperature.
2. $I_{AS}=3.5\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$.

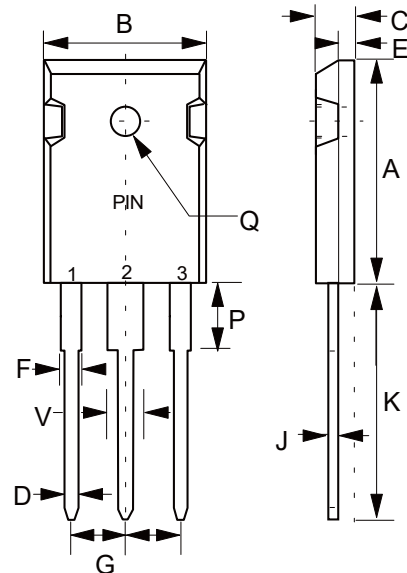
Internal Structure



1. Gate
2. Drain
3. Source

N-CHANNEL Super-Junction Power MOSFET

TO-247



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.787	0.866	20.00	22.00	
B	0.598	0.638	15.20	16.20	
C	0.185	0.208	4.70	5.30	
D	0.035	0.059	0.90	1.50	
E	0.059	0.094	1.50	2.40	
F	0.067	0.091	1.70	2.30	
J	0.019	0.031	0.48	0.80	
K	0.748	0.833	19.00	21.15	
P	0.122	0.189	3.10	4.80	
Q	0.118	0.150	3.00	3.80	Φ
V	0.106	0.134	2.70	3.40	
G	0.197	0.224	5.00	5.70	

Electrical Characteristics @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Static Characteristics							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	650			V	
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 30V$			± 100	nA	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=650V, V_{GS}=0V, T_C=25^\circ C$			1	μA	
		$V_{DS}=650V, V_{GS}=0V, T_C=125^\circ C$			100		
Gate-Threshold Voltage ^(Note 3)	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.5		4.5	V	
Drain-Source On-Resistance ^(Note 3)	$R_{DS(on)}$	$V_{GS}=10V, I_D=10A$		150	170	m Ω	
Gate Resistance ^(Note 3)	R_G	f = 1.0MHz Open Drain		12		Ω	
Dynamic Characteristics ^(Note 4)							
Input Capacitance	C_{iss}	$V_{DS}=100V, V_{GS}=0V, f=1MHz$		1724		μF	
Output Capacitance	C_{oss}			61			
Reverse Transfer Capacitance	C_{rss}			6			
Total Gate Charge	Q_g	$V_{DS}=520V, V_{GS}=10V, I_D=20A$		39		nC	
Gate-Source Charge	Q_{gs}			8			
Gate-Drain Charge	Q_{gd}			15			
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=400V, I_D=20A$ $V_{GS}=10V, R_{GEN}=25\Omega$		15		ns	
Turn-On Rise Time	t_r			59			
Turn-Off Delay Time	$t_{d(off)}$			121			
Turn-Off Fall Time	t_f			44			
Drain-Source Diode Characteristics							
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=20A$			1.2	V	
Continuous Body Diode Current	I_S				20	A	
Reverse Recovery Time	t_{rr}	$V_R=400V, I_F=I_S,$ $di_F/dt = 100A/\mu s$		423		ns	
Reverse Recovery Charge	Q_{rr}				5.3		μC
Peak Reverse Recovery Current	I_{rrm}				25		A

Note:

3.Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 1\%$.

4.Guaranteed by Design, not Subject to Production.

Curve Characteristics

Fig. 1 - Typical Output Characteristics

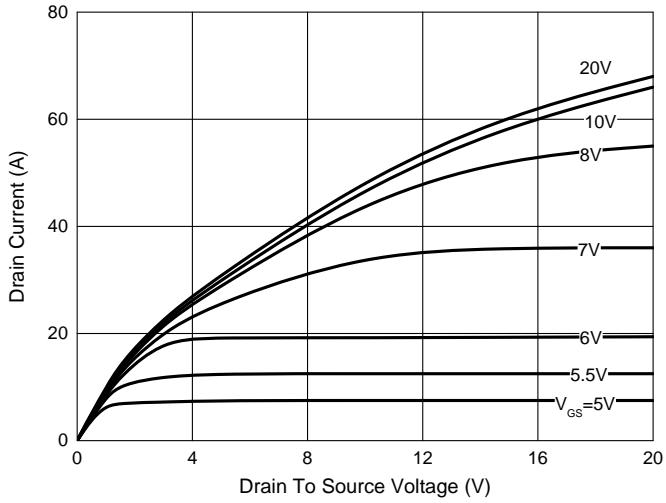


Fig. 2 - Transfer Characteristics

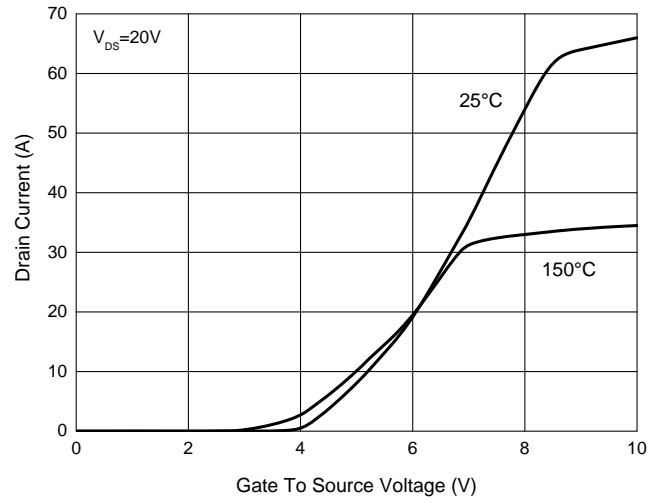


Fig. 3 - $R_{DS(ON)} - I_D$

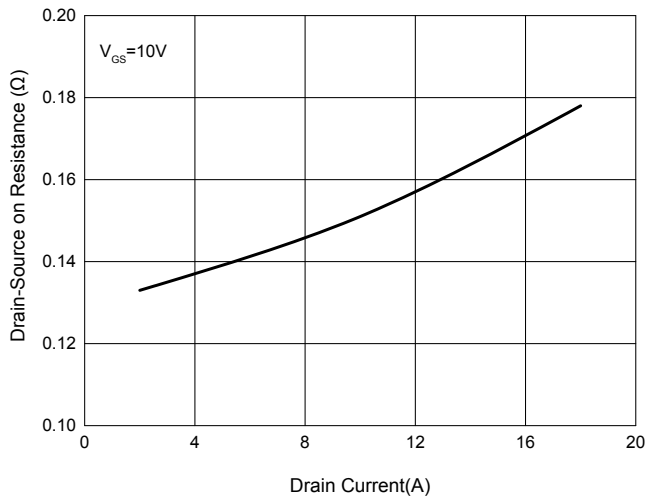


Fig. 4 - Capacitance Characteristics

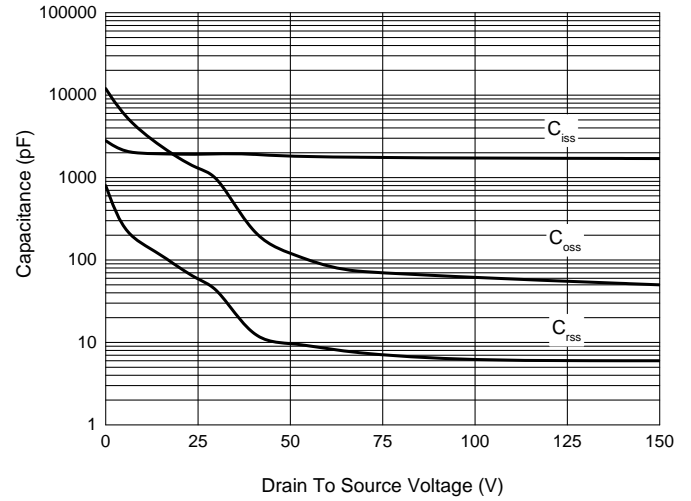


Fig. 5 - Total Gate Charge Characteristics

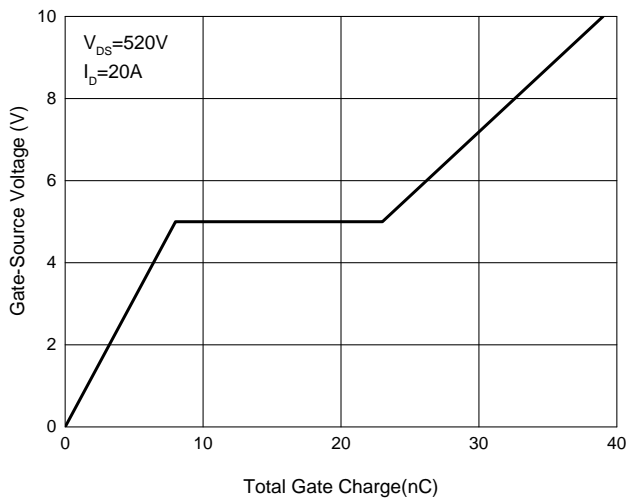
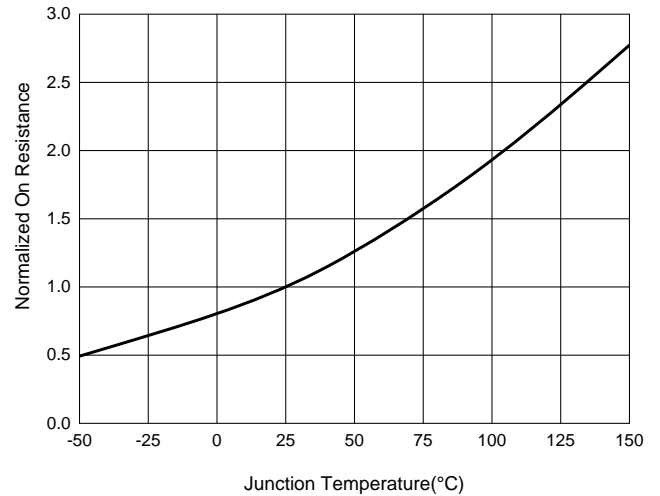


Fig. 6 - Normalized On Resistance Characteristics



Ordering Information

Device	Packing
Part Number-BP	Bulk: 360pcs/Box

Note : Adding "-HF" Suffix for Halogen Free, eg. Part Number-BP-HF

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