

Features

- 100V/170A
RDS(ON)= 5mΩ (Max)@ VGS=10V
- Lead free and Green Device Available
- Low Rds-on to Minimize Conductive Loss
- High avalanche Current

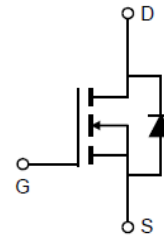
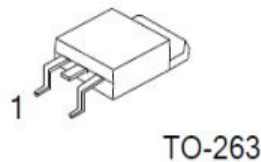
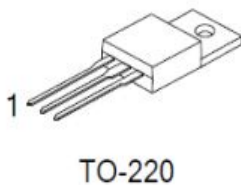
Applications

- Power Supply
- DC-DC Converters

Product Summary

V_{DS}	100	V
$R_{DS(on),TYP}@ V_{GS}=10V$	4.5	mΩ
I_D	150	A

Part ID	Package Type	Marking
SFP150N100A	TO-220	150N100A
SFB150N100A	TO-263	150N100A



Absolute Maximum Ratings ($T_A=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Maximum	Unit
V_{DSS}	Drain-to-Source Voltage	100	V
V_{GSS}	Gate-to-Source Voltage	±25	V
I_D^3	Continuous Drain Current	$T_C=25^{\circ}C$	150
		$T_C=100^{\circ}C$	120
I_{DP}^4	Pulsed Drain Current	$T_C=25^{\circ}C$	600
I_{AS}^5	Avalanche Current	40	A
EAS^5	Avalanche energy	700	
PD	Maximum Power Dissipation	$T_C=25^{\circ}C$	240
		$T_C=100^{\circ}C$	125
T_J, T_{STG}	Junction & Storage Temperature Range	-55~175	$^{\circ}C$

Thermal Characteristics

Symbol	Parameter	Typical	Unit
$R_{\theta jc}$	Thermal Resistance-Junction to Case	0.6	$^{\circ}C/W$
$R_{\theta ja}$	Thermal Resistance-Junction to Ambient	62.5	

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

Symbol	Parameter	Test Conditions	Min.	Typ	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	100	—	—	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=80V, V_{GS}=0V$	—	—	1	uA
		$T_J=125^\circ C$	—	—	100	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2	3	4	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 25V, V_{DS}=0V$	—	—	± 100	nA
$R_{DS(on)}^1$	Drain-Source On-Resistance	$V_{GS}=10V, I_D=40A$	—	4.5	5	mΩ
			—	—	—	
Diode Characteristics						
V_{SD}^1	Diode Forward Voltage	$I_{SD}=40A, V_{GS}=0V$	—	0.8	1.3	V
I_S^3	Diode Continuous Forward Current		—	—	180	A
t_{rr}	Reverse Recovery Time	$I_F=40A,$	—	65	—	nS
Q_{rr}	Reverse Recovery Charge	$di/dt=100A/\mu s$	—	103	—	nC
Dynamic Characteristics²						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V,$ Frequency=1MHz	—	2.5	—	Ω
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=25V$ Frequency=1MHz	—	7850	—	pF
C_{oss}	Output Capacitance		—	1010	—	
C_{riss}	Reverse Transfer Capacitance		—	630	—	
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=37.5V, I_D=40A,$ $V_{GS}=10V, R_G=6.8\Omega$	—	28	—	nS
t_r	Rise Time		—	45	—	
$t_{d(off)}$	Turn-Off Delay Time		—	84	—	
t_f	Fall Time		—	49	—	
Gate Charge Characteristics²						
Q_g	Total Gate Charge	$V_{DS}=37.5V, V_{GS}=10V$ $I_D=40A$	—	184	—	nC
Q_{gs}	Gate-to-Source Charge		—	33	—	
Q_{gd}	Gate-to-Drain Charge		—	60	—	

Note: 1: Pulse test; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

2: Guaranteed by design, not subject to production testing.

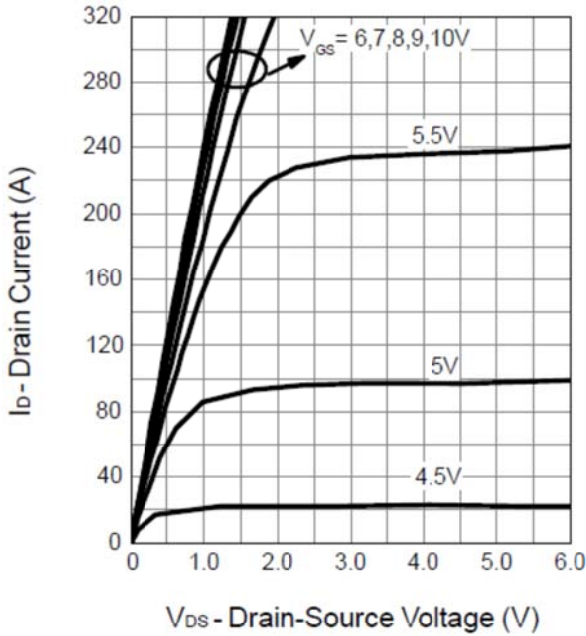
3: Calculated continuous current based on maximum allowable junction temperature.

4: Repetitive rating, pulse width limited by max junction temperature.

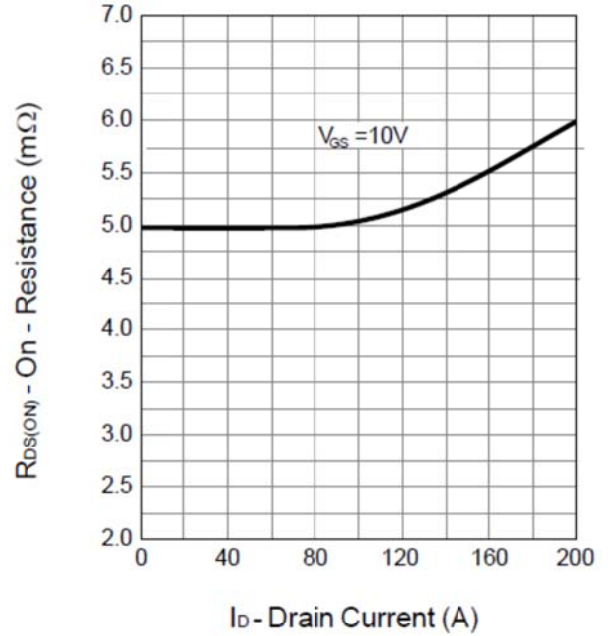
5: Starting $T_J = 25^\circ C, L = 0.5mH, V_{DD}=80V, I_{AS} = 74A$.

Typical Operating Characteristics

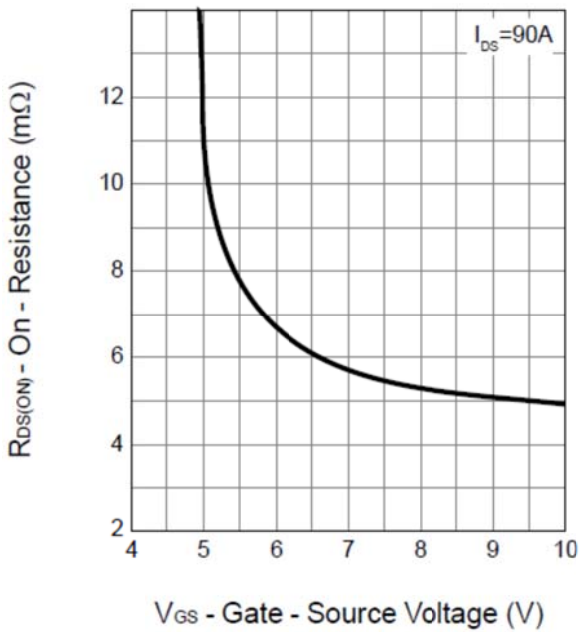
Output Characteristics



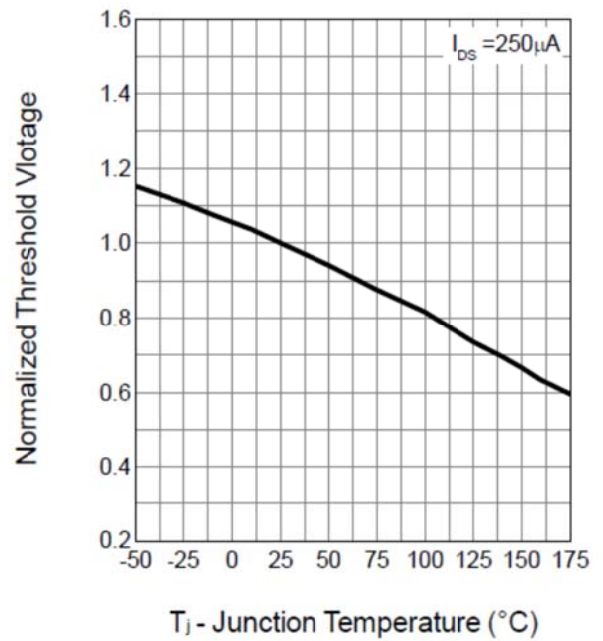
Drain-Source On Resistance



Drain-Source On Resistance

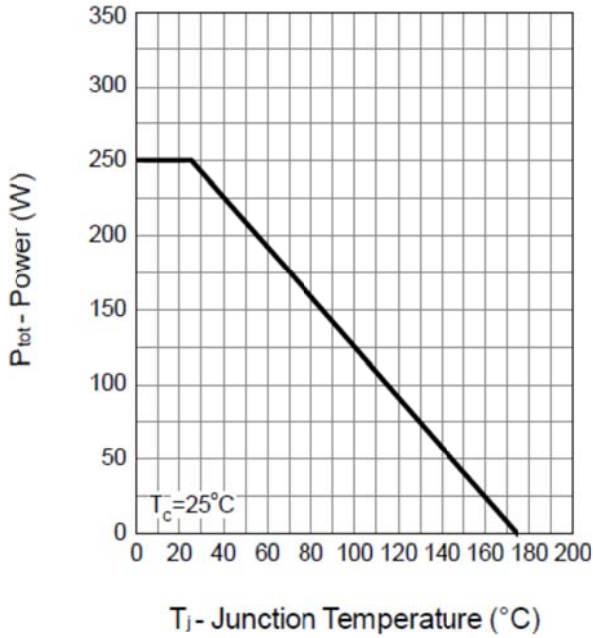


Gate Threshold Voltage

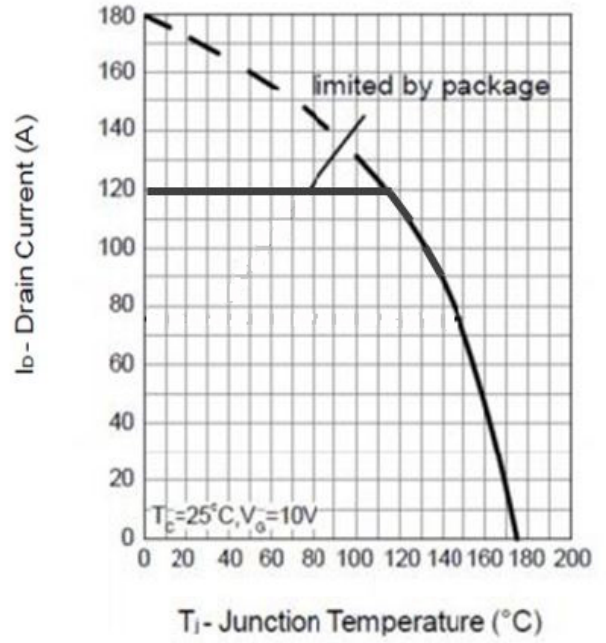


Typical Operating Characteristics

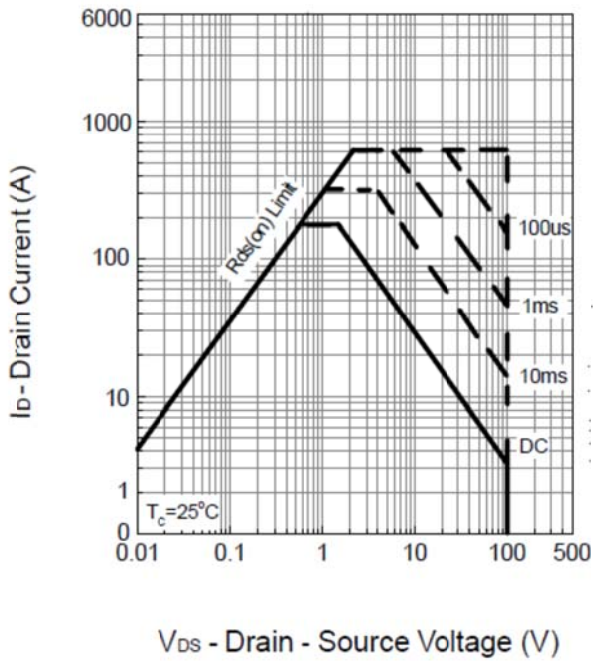
Power Dissipation



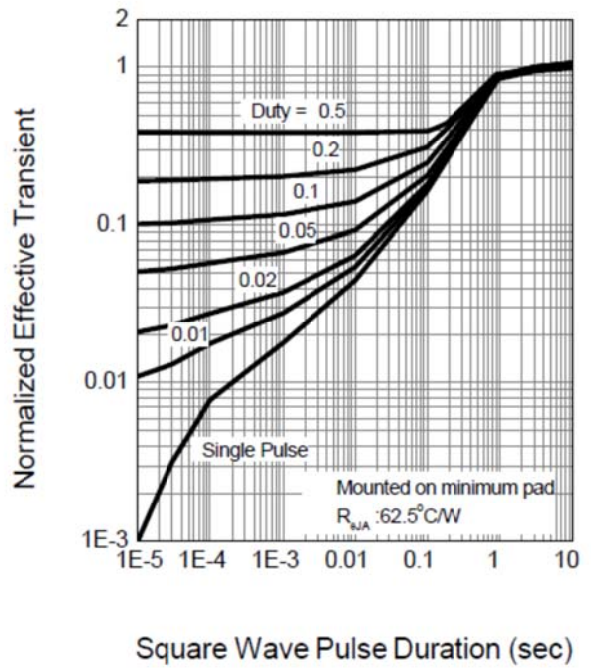
Drain Current



Safe Operation Area

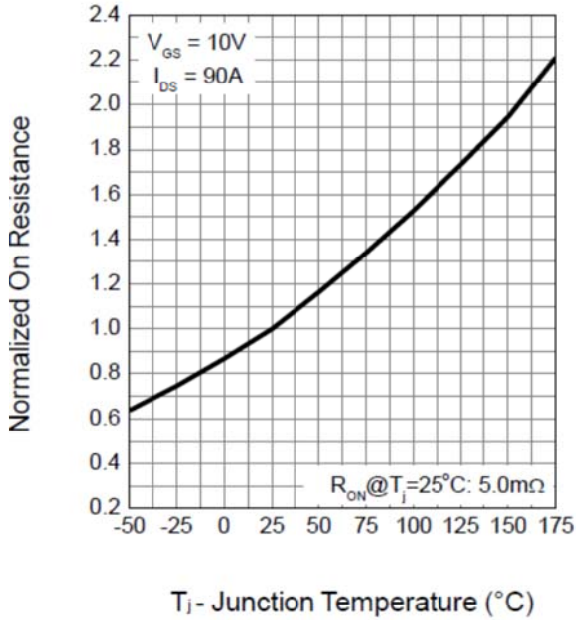


Thermal Transient Impedance

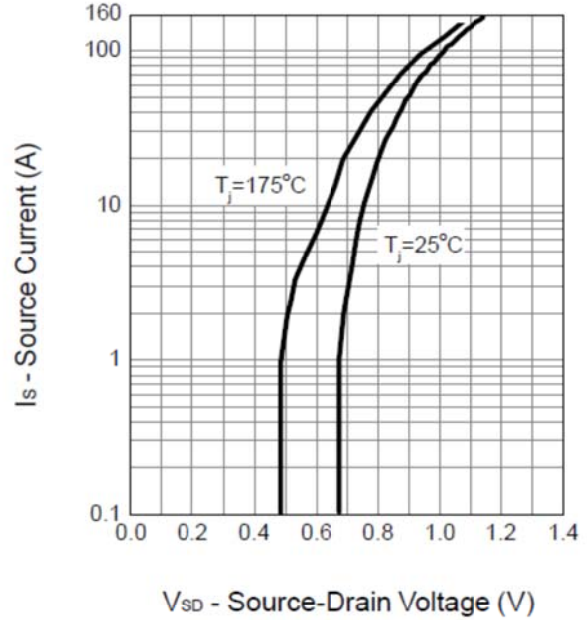


Typical Operating Characteristics

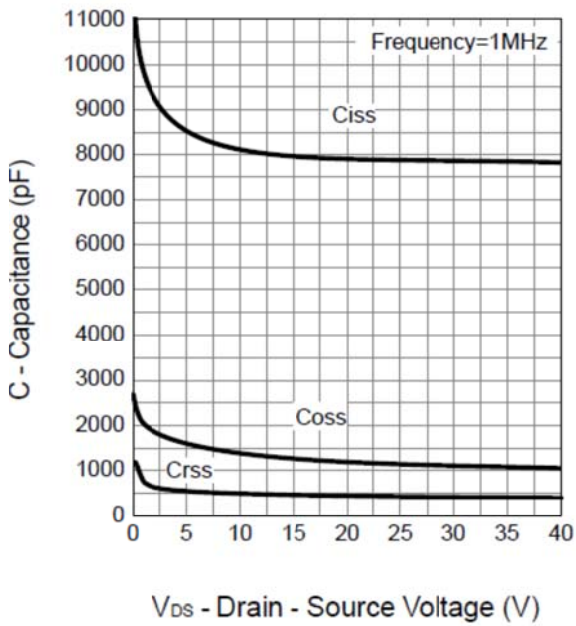
Drain-Source On Resistance



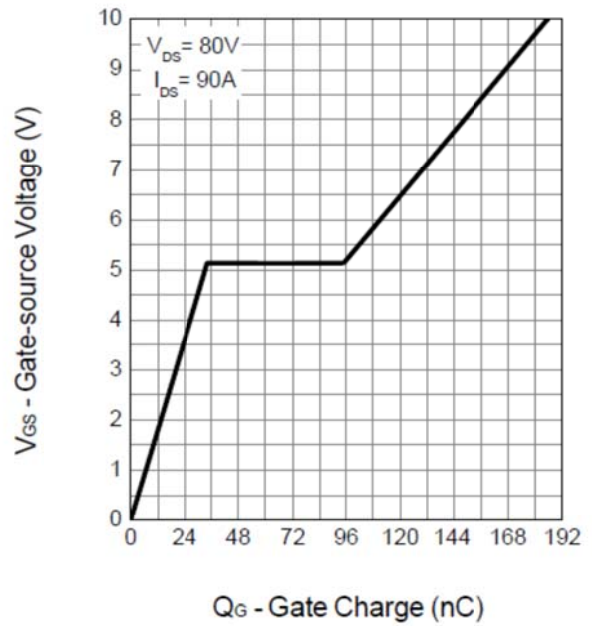
Source-Drain Diode Forward

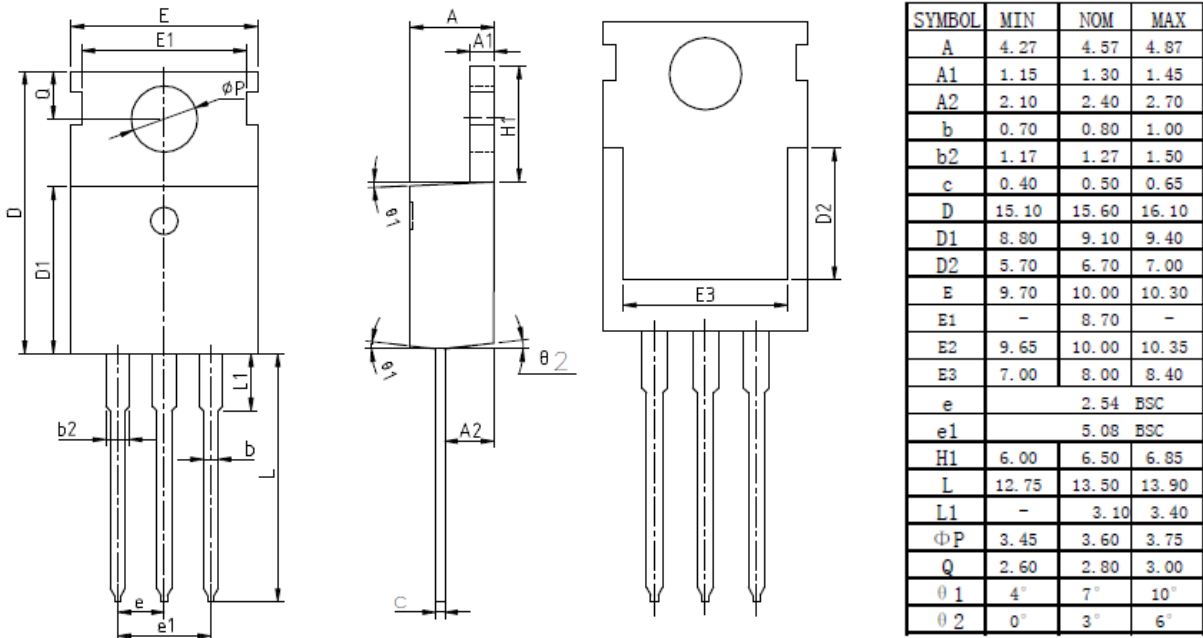


Capacitance



Gate Charge



PACKAGE DIMENSION
TO-220

TO-263
