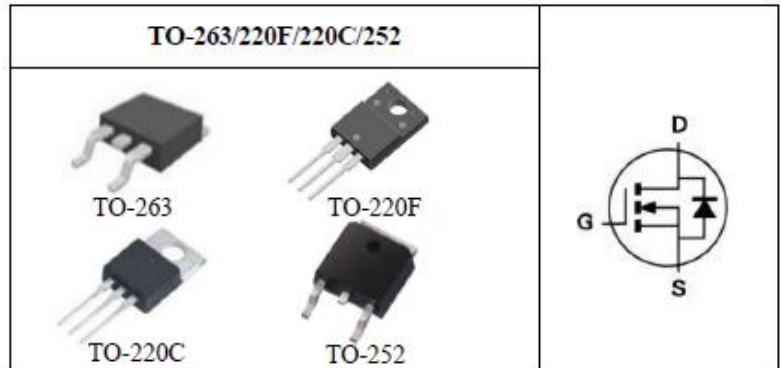


Key Performance Parameters		
Parameter	Value	Unit
V_{DS}	650	V
$R_{DS(ON)max}$ $V_{GS}=10V$	370	mΩ
I_D	9.6	A
Q_G	18.9	nC



Features	Application
- Optimized for synchronous rectification - Low Input Capacitance - Low Miller Capacitance - Fully Characterized Capacitance and Avalanche - Pb-free lead plating; RoHS compliant	- BLDC Motor drive applications - Battery powered circuits - Synchronous rectifier applications - Resonant mode power supplies

Ordering Information

Ordering Code	RoHS Status	Package	Package Code	Packing
SJ370M65AB	Halogen-Free	TO-263	B	Tube
SJ370M65AHF	Halogen-Free	TO-220F	HF	Tube
SJ370M65AHC	Halogen-Free	TO-220C	HC	Tube
SJ370M65AM0	Halogen-Free	TO-252	M0	Tape&Reel

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	± 30	V
Drain Current-Continuous ^{Note1}	$T_C=25^{\circ}C$	9.6	A
	$T_C=125^{\circ}C$	6	A
Drain Current-Pulsed ^{Note2}	$T_C=25^{\circ}C$	28.8	A
Avalanche Current	I_{AS}	5.6	A
Single Pulse Avalanche Energy ^{Note3}	E_{AS}	313.6	mJ
Maximum Power Dissipation(AB/AHF/AHC/AM0)	$T_C=25^{\circ}C$	73/28/73/83	W
Storage Temperature Range	T_{STG}	-55 to 150	$^{\circ}C$
Operating Junction Temperature Range	T_J	-55 to 150	$^{\circ}C$

Thermal Resistance Ratings

Parameter	Conditions	Min.	Typ.	Max.	Unit
Thermal resistance, Junction-to-Ambient(AB) ^{Note4}	Steady State			62	$^{\circ}C/W$
Thermal resistance, Junction-to-Case(AB) ^{Note4}	Steady State			1.7	$^{\circ}C/W$
Thermal resistance, Junction-to-Ambient(AHF) ^{Note4}	Steady State			80	$^{\circ}C/W$
Thermal resistance, Junction-to-Case(AHF) ^{Note4}	Steady State			4.4	$^{\circ}C/W$
Thermal resistance, Junction-to-Ambient(AHC) ^{Note4}	Steady State			62	$^{\circ}C/W$
Thermal resistance, Junction-to-Case(AHC) ^{Note4}	Steady State			1.7	$^{\circ}C/W$
Thermal resistance, Junction-to-Ambient(AM0) ^{Note4}	Steady State			62	$^{\circ}C/W$
Thermal resistance, Junction-to-Case(AM0) ^{Note4}	Steady State			1.5	$^{\circ}C/W$

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

STATIC CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V$, $I_{DS}=250\mu A$	650			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=650V$, $V_{GS}=0V$, $T_J=25^\circ C$			1	μA
		$V_{DS}=650V$, $V_{GS}=0V$, $T_J=125^\circ C$			100	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 30V$, $V_{DS}=0V$			± 100	nA

STATIC CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_{DS}=250\mu A$	3.5		4.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V$, $I_{DS}=5.1A$		330	370	mΩ
Gate Resistance	R_g	$V_{GS}=0V$, $V_{DS}=0V$, $f=1MHz$		7.6		Ω

DYNAMIC CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input Capacitance	C_{iss}	$V_{DS}=100V$, $V_{GS}=0V$, $f=100kHz$		866		pF
Output Capacitance	C_{oss}	$V_{DS}=100V$, $V_{GS}=0V$, $f=100kHz$		30		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=100V$, $V_{GS}=0V$, $f=100kHz$		0.6		pF
Turn-On Delay Time	$T_{d(on)}$	$V_{DS}=400V$, $V_{GS}=18V$, $I_{DS}=5.1A$, $R_G=3\Omega$		28.8		ns
Rise Time	t_r	$V_{DS}=400V$, $V_{GS}=18V$, $I_{DS}=5.1A$, $R_G=3\Omega$		45.7		ns
Turn-Off Delay Time	$T_{d(off)}$	$V_{DS}=400V$, $V_{GS}=18V$, $I_{DS}=5.1A$, $R_G=3\Omega$		36.1		ns
Fall Time	t_f	$V_{DS}=400V$, $V_{GS}=18V$, $I_{DS}=5.1A$, $R_G=3\Omega$		30		ns

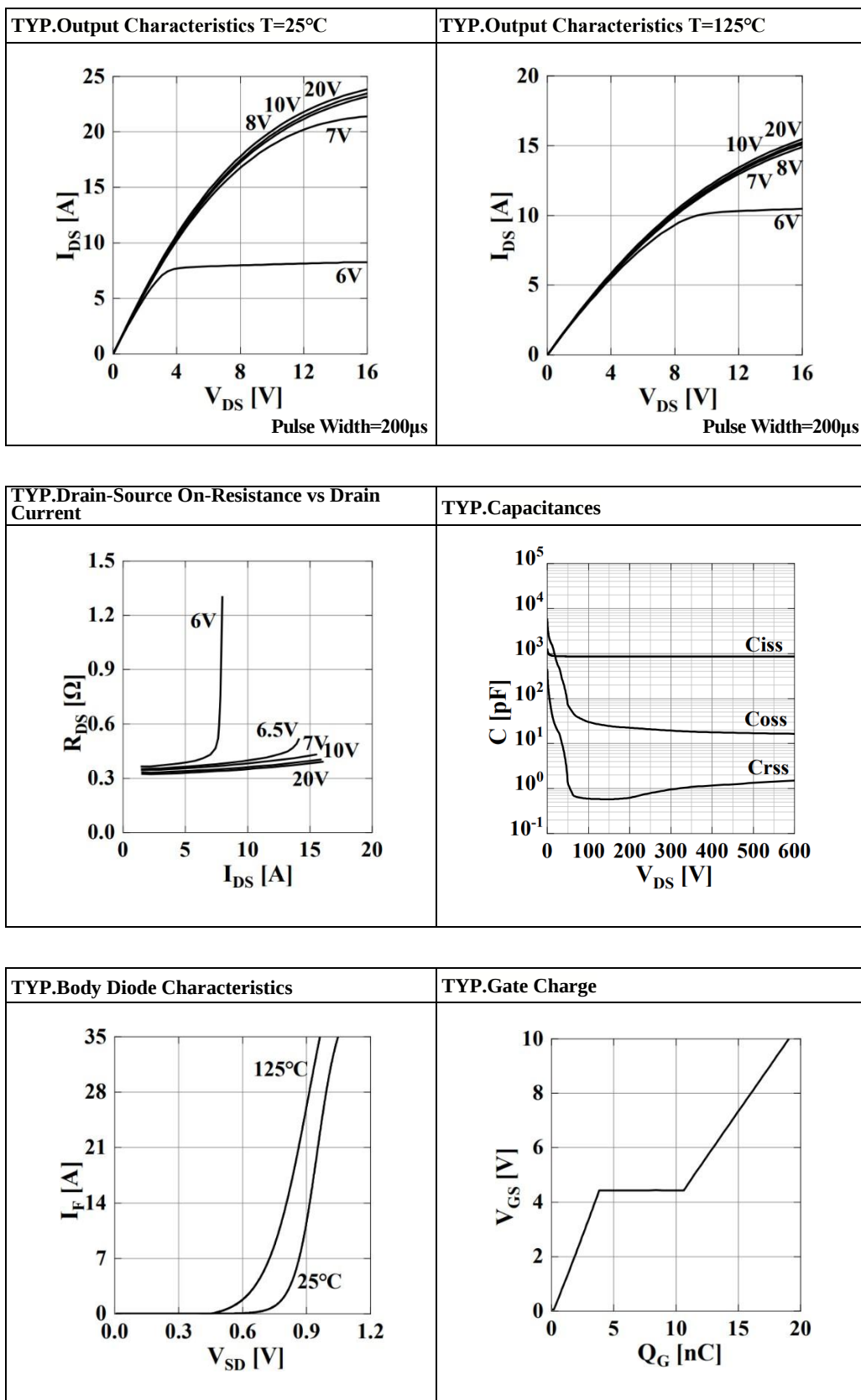
GATE CHARGE CHARACTERISTICS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Gate to Source Gate Charge	Q_{gs}	$V_{GS}=0$ to $10V$, $V_{DD}=400V$, $I_D=5.1A$		3.5		nC
Gate to Drain Charge	Q_{gd}	$V_{GS}=0$ to $10V$, $V_{DD}=400V$, $I_D=5.1A$		6.8		nC
Gate Charge Total	Q_G	$V_{GS}=0$ to $10V$, $V_{DD}=400V$, $I_D=5.1A$		18.9		nC

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Diode Forward Voltage	V_{SD}	$V_{GS}=0V$, $I_F=5.1A$		0.8	1.08	V
Body Diode Reverse Recovery Time	t_{rr}	$V_{DD}=400V$, $I_F=5.1A$, $di/dt=100A/\mu s$		249.6		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$V_{DD}=400V$, $I_F=5.1A$, $di/dt=100A/\mu s$		2.7		μC
Reverse Recovery Current	I_{RRM}	$V_{DD}=400V$, $I_F=5.1A$, $di/dt=100A/\mu s$		21.2		A

Notes:

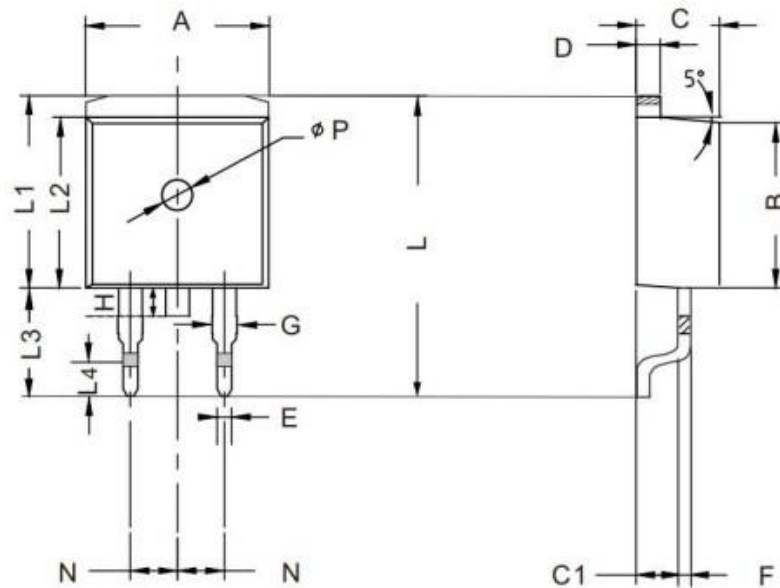
1. The maximum current rating is package limited.
2. Pulse Test: Pulse Width $\leq 10\mu s$.
3. Starting $T_J=25^\circ C$, $L=20mH$, $V_D=50V$, $V_{GS}=10V$.
4. For surface-mounted devices, both R_{thJC} and R_{thJA} are measured with the device mounted on approximately 1"×1" FR-4 PCBs. In actual applications, many factors including the PCB material and layout, may affect the thermal resistance of the device-board assembly. For best results, characterize the thermal resistance directly in the application circuit.

Typical Operating Characteristics



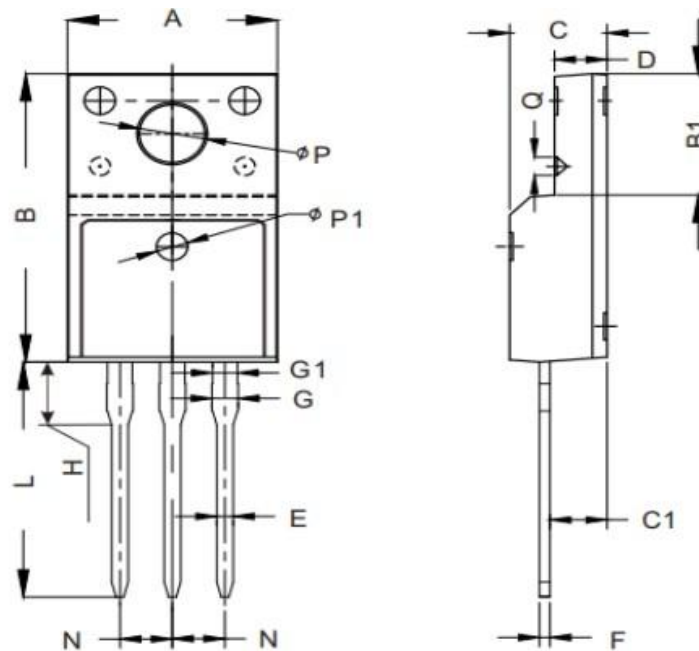
Outline

TO-263



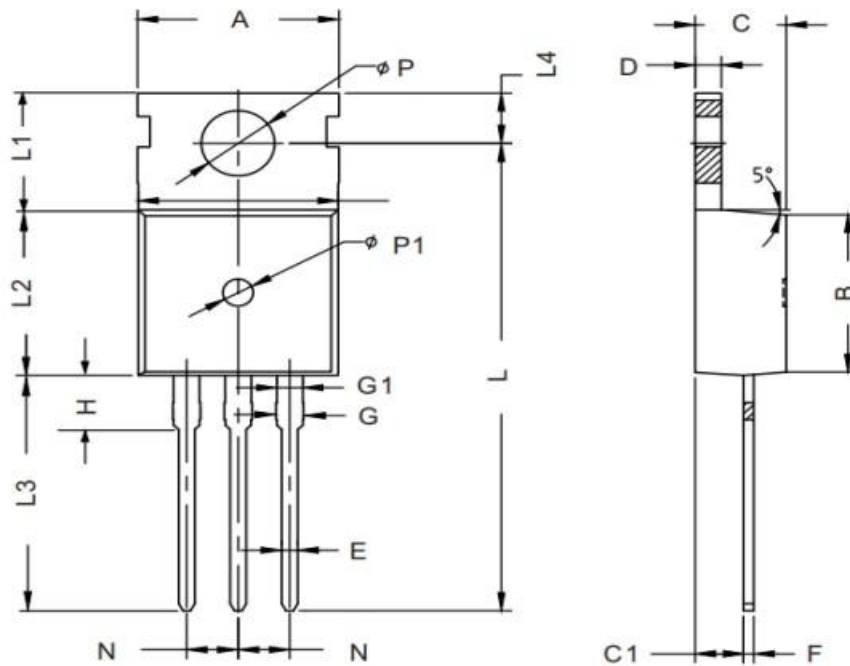
Symbol	Millimeters		Symbol	Millimeters	
	Min.	Max.		Min.	Max.
A	9.60	10.30	H	1.45	1.75
B	8.40	9.00	L	14.60	15.00
C1	2.20	2.60	L1	10.00	11.00
C	4.30	4.70	L2	9.00	9.40
D	1.20	1.40	L3	4.10	4.50
E	0.70	0.90	L4	1.70	2.10
F	0.40	0.60	N	2.50	2.58
G	1.20	1.50	ØP	1.40	1.60

TO-220F



Symbol	Millimeters		Symbol	Millimeters	
	Min.	Max.		Min.	Max.
A	9.60	10.4	G	1.12	1.42
B	15.4	16.2	G1	1.10	1.40
B1	6.30	6.90	H	3.40	3.80
C	4.30	4.90	L	12.0	14.0
C1	2.56	2.96	N	2.34	2.74
D	2.40	2.90	ØP	3.00	3.30
E	0.60	1.00	ØP1	1.35	1.75
F	0.30	0.60	Q	0.80	1.20

TO-220C



Symbol	Millimeters		Symbol	Millimeters	
	Min.	Max.		Min.	Max.
A	9.60	10.3	H	2.70	3.30
B	8.40	9.00	L	25.90	26.50
C1	2.20	2.60	L1	6.30	6.70
C	4.30	4.70	L2	9.00	9.40
D	1.20	1.40	L3	12.50	14.10
E	0.70	0.90	L4	2.70	2.90
F	0.40	0.60	N	2.50	2.58
G	1.20	1.50	ØP	3.50	3.70
G1	1.10	1.40	ØP1	1.40	1.60

TO-252

