

Maximum Ratings $T_j = 25$ unless otherwise specified

Parameter	Symbol	Value	Unit
Drain-Source Breakdown Voltage	V_{DS}	100	V
DC collector current, limited by T_{jmax} $T_C = 25^\circ C$ $T_C = 100^\circ C$	I_D	120 110	A
Pulsed drain current, $T_C = 25^\circ C$, t_p limited by T_{jmax}	I_{DM}	480	A
	E_{AS}	306	mJ
Gate source voltage	V_{GS}	± 20	V
Power dissipation $T_C = 25^\circ C$	P_{tot}	236	W
Operating junction temperature	T_j, T_{stg}	-55...+150	$^\circ C$

Thermal Resistance

Parameter	Symbol	Max	Unit
Thermal resistance, junction - case	R (j-c)	0.54	$^\circ C/W$
Thermal resistance, junction ambient(minimal footprint)	R (j-a)	70	$^\circ C/W$

Electrical Characteristics $T_j = 25$ unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Static Characteristics						
Drain to Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250 A$	100	108	-	V
G-S Threshold Voltage	$V_{GS(th)}$	$V_{GS} = V_{CS}, I_D$	2.0	3.0	4.0	V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 100V, V_{GS} = 0V$ $T_j = 25^\circ C$ $T_j = 125^\circ C$	- -	0.05 10	1 100	
G-S Leakage Current	I_{GSS}	$V_{GS} = 20V, V_{DS} = 0V$	-	± 10	± 100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 50A$ TO-220 TO-263	-	3.4 3.2	4.2 4.0	m Ω
Transconductance	g_{fs}	$V_{DS} = 5V, I_D = 50A$	-	50	-	S

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Dynamic						
Input capacitance	C_{iss}	$V_{DS} = 50V, V_{GS} = 0V,$ $f = 1MHz$	-	4700	-	pF
Output capacitance	C_{oss}		-	1080	-	
Reverse transfer capacitance	C_{rss}		-	31	-	
Gate Total Charge	Q_g	$V_{GS}=10V, V_{DS}=50V,$ $I_D=20A, f=1MHz$		67		nC
Gate-Source charge	Q_{gs}			27		
Gate-Drain charge	Q_{gd}			11		
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=50V,$ $R_G=3.0\Omega$		29		ns
Rise Time	t_r			84		
Turn-off Delay Time	$t_{d(off)}$			46		
Fall Time	t_f			93		
Gate resistance	R_G	$V_{DS} = 0V, V_{GS} = 0V,$ $f=1MHz$	-	1.8	-	Ω

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Body Diode Characteristics						
Body Diode Forward Voltage	V_{SD}	$I_{SD} = 50A, V_{GS}=0V$		0.85	1.2	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F = 50A, dI/dt=100A/ s$		67		ns
Body Diode Reverse Recovery Charge	Q_{rr}				125	

Typical Performance Characteristics

Fig1: Output Characteristics

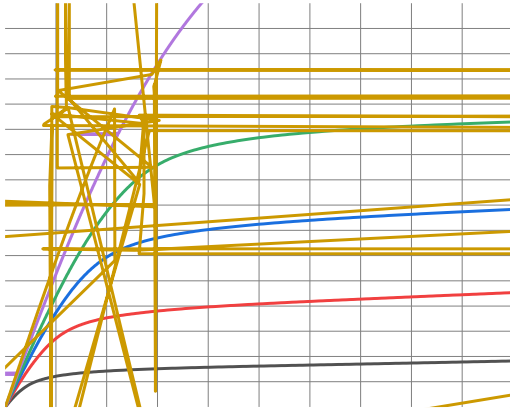


Fig2: Transfer Characteristics

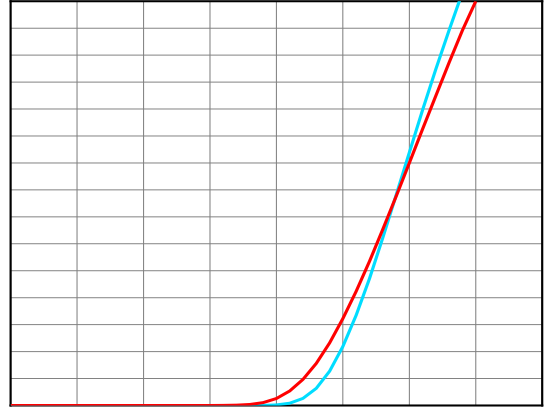


Fig3: Rds(on) vs Gate Voltage

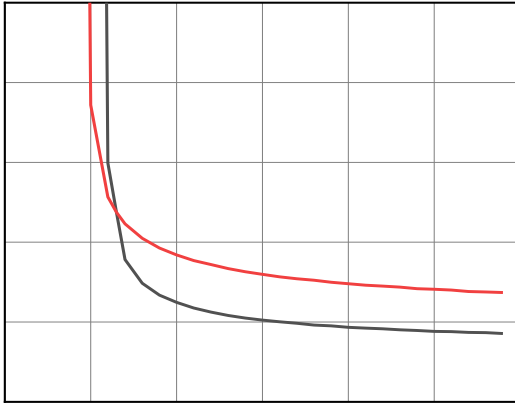


Fig4: Rds(on) vs Drain Current and Gate Voltage



Fig5: Rds(on) vs. Temperature

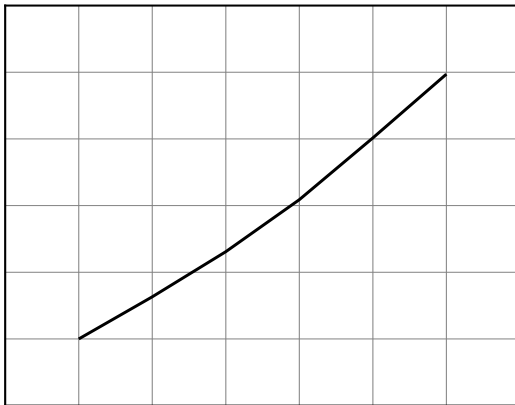


Fig6: Capacitance Characteristics

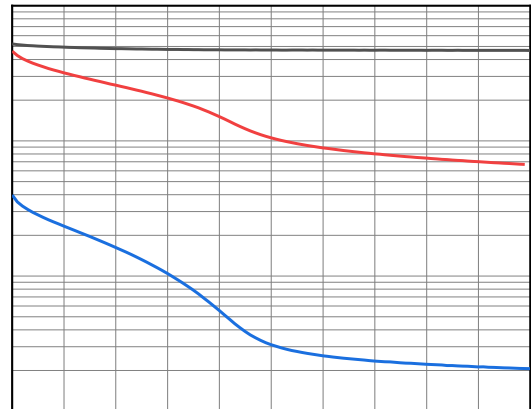


Fig7: Gate Charge Characteristics

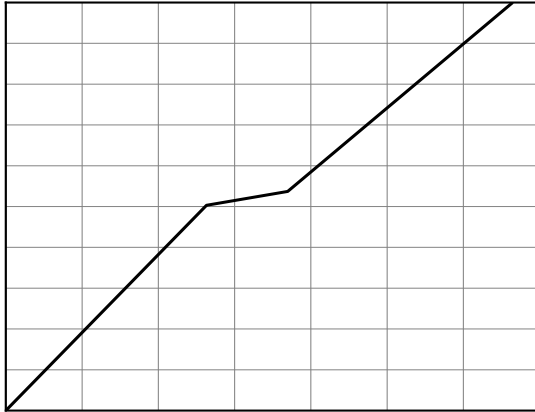


Fig8: Body-diode Forward Characteristics

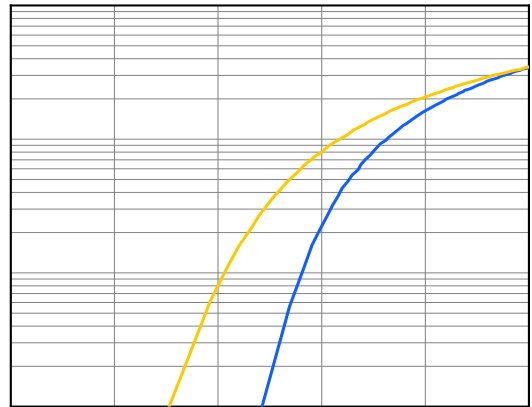


Fig9: Power Dissipation



Fig10: Drain Current Derating

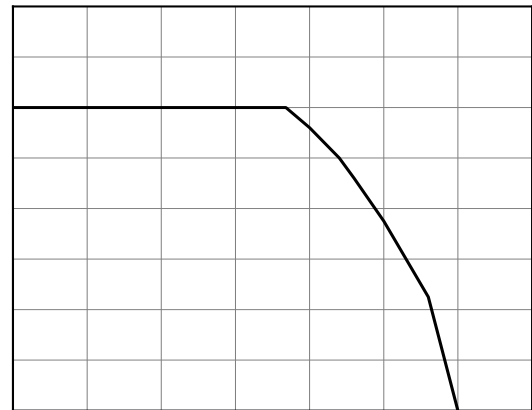


Fig11: Safe Operating Area

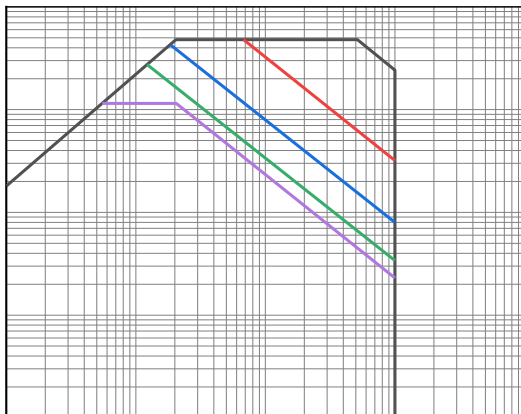
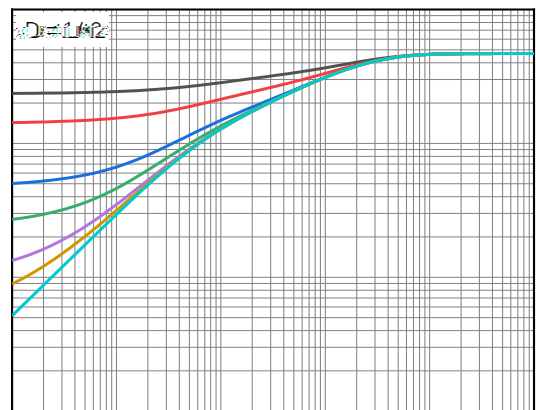
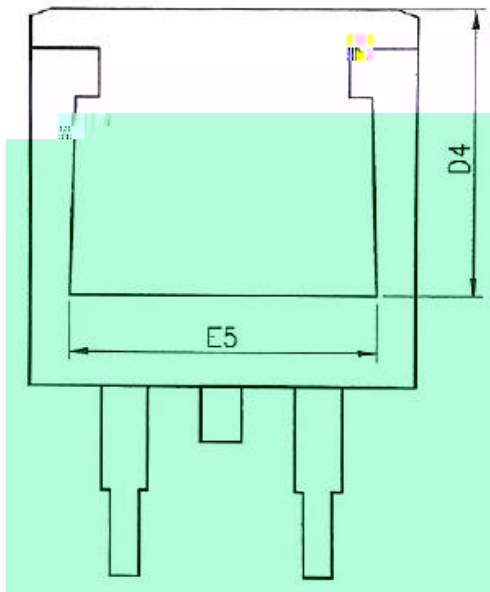
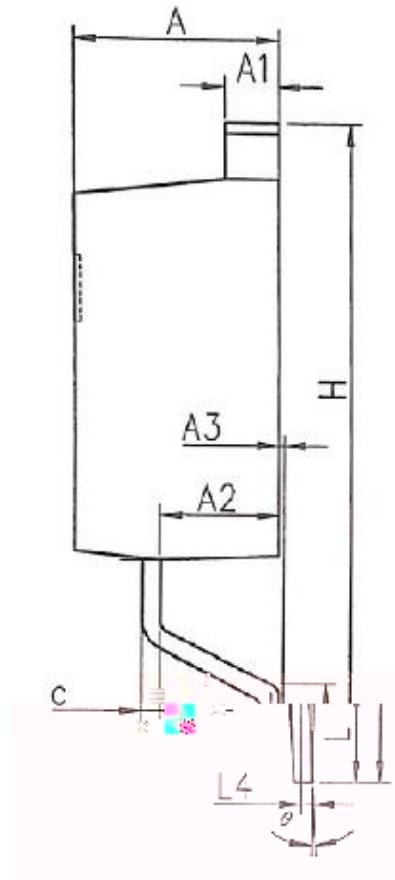
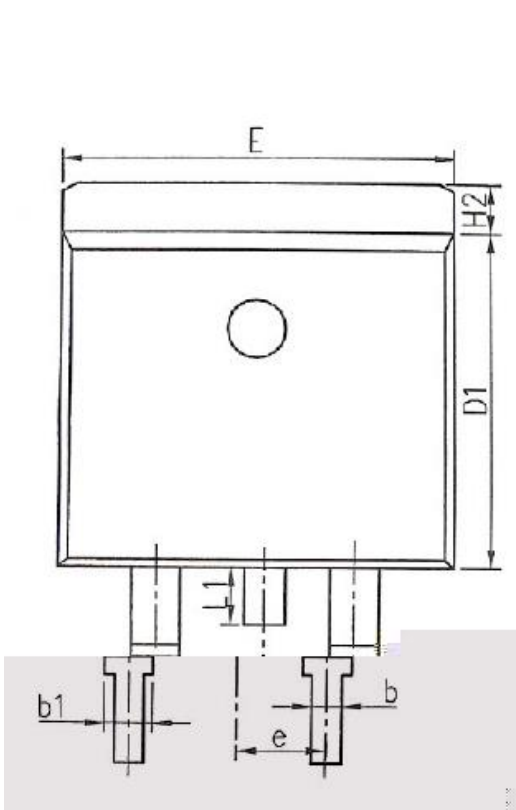


Fig12: Max. Transient Thermal Impedance



TO-220F package information

TO-263 package information



SYMBOL	MM		
	MIN	NOM	MAX
A	4.37	4.57	4.77
A1	1.22	1.27	1.42
A2	2.49	2.69	2.89
A3			

TO-220 package information