

Absolute Maximum Ratings at $T_j=25$ °C unless otherwise noted

Parameter	Symbol	Value	Unit
Drain source voltage	V_{DS}	60	V
Gate source voltage	V_{GS}	± 20	V
Continuous drain current ¹⁾ , $T_C=25$ °C	I_D	160	A
Pulsed drain current ²⁾ , $T_C=25$ °C	$I_{D, pulse}$	480	A
Continuous diode forward current ¹⁾ , $T_C=25$ °C	I_S	160	A
Diode pulsed current ²⁾ , $T_C=25$ °C	$I_{S, Pulse}$	480	A
Power dissipation ³⁾ , $T_C=25$ °C	P_D	168	W
Single pulsed avalanche energy ⁵⁾	E_{AS}	200	mJ
Operation and storage temperature	T_{stg} T_j	-55 to 175	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance, junction-case	$R_{\theta jc}$	0.89	°C/W
Thermal resistance, junction-ambient ⁴⁾	$R_{\theta ja}$	62	°C/W

Electrical Characteristics at $T_j=25$ °C unless otherwise specified

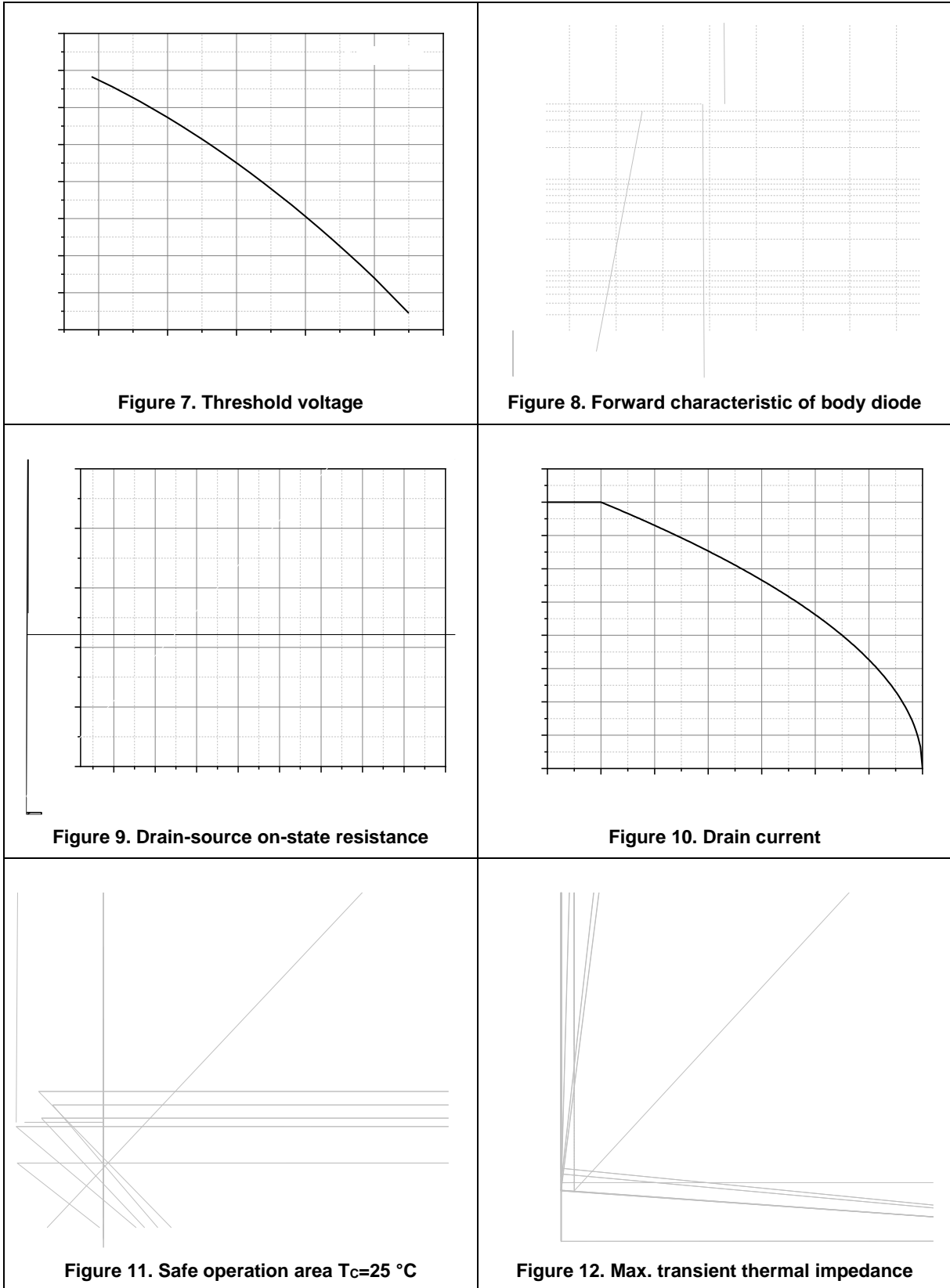
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Drain-source breakdown voltage	BV_{DSS}	60			V	$V_{GS}=0$ V, $I_D=250$ A
Gate threshold voltage	$V_{GS(th)}$	1.3		2.5	V	$V_{DS}=V_{GS}$, $I_D=250$ A
Drain-source on-state resistance	$R_{DS(ON)}$		3.0	3.5		$V_{GS}=10$ V, $I_D=20$ A
Drain-source on-state resistance	$R_{DS(ON)}$		3.5	4.5		$V_{GS}=4.5$ V, $I_D=10$ A
Gate-source leakage current	I_{GSS}			100	nA	$V_{GS}=20$ V
				-100		$V_{GS}=-20$ V
Drain-source leakage current	I_{DSS}			1	A	$V_{DS}=60$ V, $V_{GS}=0$ V

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		5377		pF	$V_{GS}=0\text{ V}$, $V_{DS}=25\text{ V}$, 0 kHz
Output capacitance	C_{oss}		1666		pF	
Reverse transfer capacitance	C_{rss}		77.7		pF	
Turn-on delay time	$t_{d(on)}$		22.5		ns	$V_{GS}=10\text{ V}$, $V_{DS}=30\text{ V}$, $R_{\theta 0}$ $I_D=25\text{ A}$
Rise time	t_r		6.7		ns	
Turn-off delay time	$t_{d(off)}$		80.3		ns	
Fall time	t_f		26.8		ns	

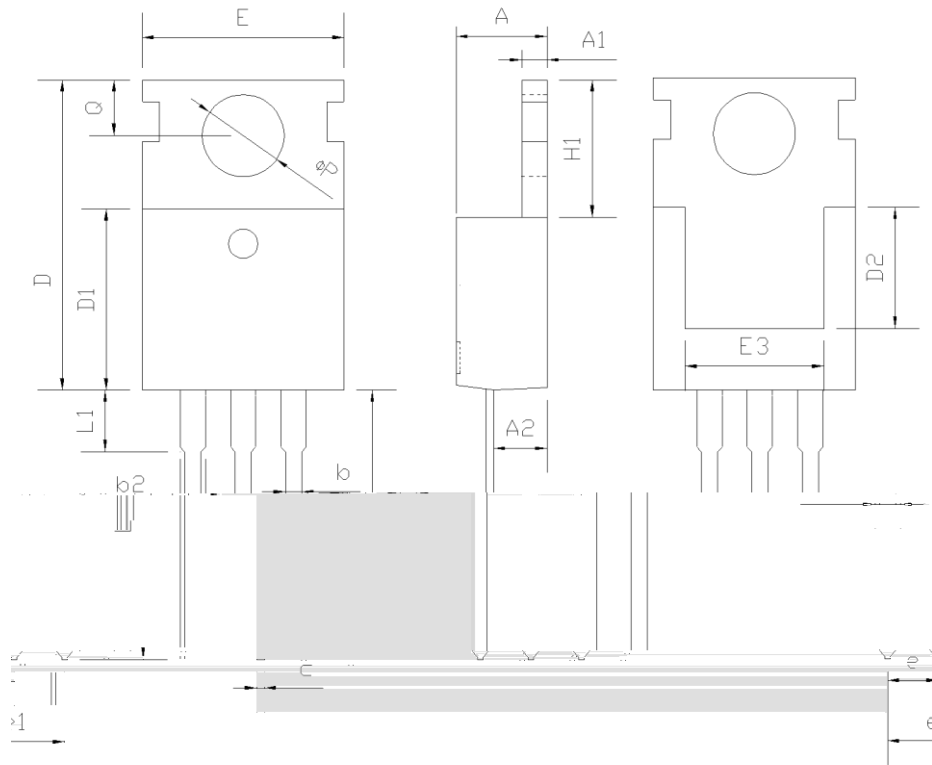
Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	Q_g		66.1		nC	$V_{GS}=10\text{ V}$, $V_{DS}=30\text{ V}$, $I_D=25\text{ A}$
Gate-source charge	Q_{gs}		10.7			



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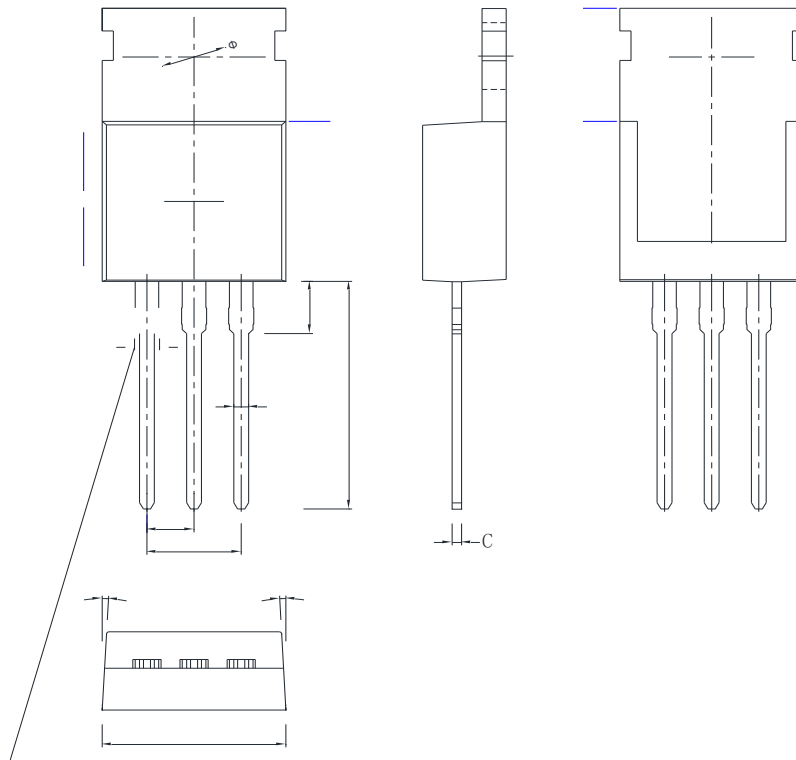
Package Information



Symbol	mm		
	Min	Nom	Max
A	4.37	4.57	4.77
A1	1.25	1.30	1.45
A2	2.20	2.40	2.60
b	0.70	0.80	0.95
b2	1.17	1.27	1.47
c	0.40	0.50	0.65
D	15.10	15.60	16.10
D1	8.80	9.10	9.40
D2	5.50	-	-
E	9.70	10.00	10.30
E3	7.00	-	-
e	2.54 BSC		
e1	5.08 BSC		
H1	6.25	6.50	6.85
L	12.75	13.50	13.80
L1	-	3.10	3.40
C	3.40	3.60	3.80
Q	2.60	2.80	3.00

Version 1: TO220-C package outline dimension

Package Information



Symbol	mm		
	Min	Nom	Max
A	4.40	4.50	4.60
A1	1.27	1.30	1.33
A2	2.30	2.40	2.50
b	0.70	-	0.90
b1	1.27	-	1.40
c	0.45	0.50	0.60
D	15.30	15.70	16.10
D1	9.10	9.20	9.30
D2	13.10	-	13.70
E	9.70	9.90	10.20
E1	7.80	8.00	8.20
e	2.54 BSC		
e1	5.08 BSC		
H1	6.30	6.50	6.70
L	12.78	13.08	13.38
L1	-	-	3.50
L2	4.60 REF		
C	3.55	3.60	3.65
Q	2.73	-	2.87
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Version 2: TO220-J package outline dimension

Ordering Information

Package Type	Units/ Tube	Tubes / Inner Box	Units/ Inner Box	Inner Boxes/
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