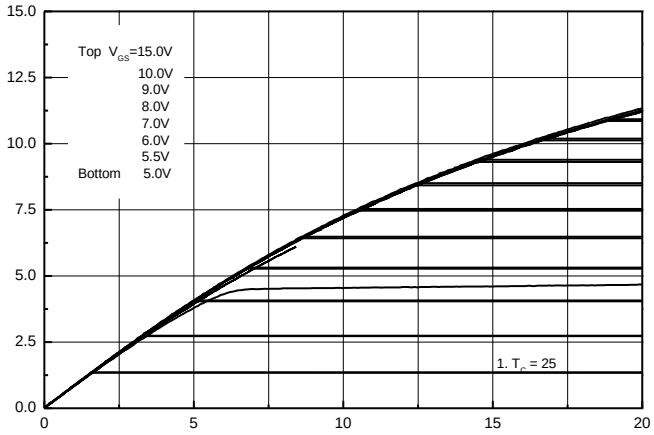
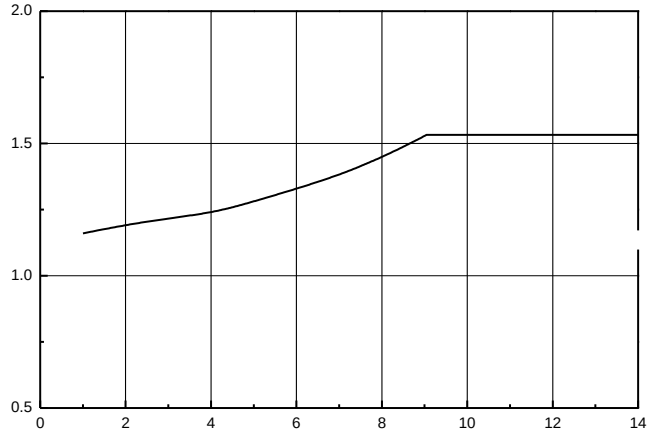
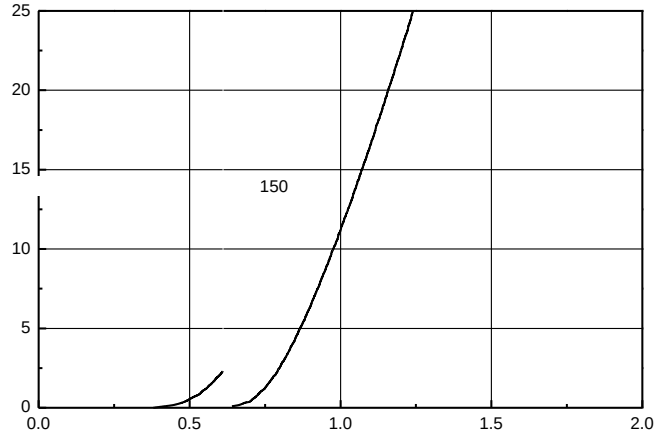
Electrical Characteristics : T_C=25 , unless otherwise noted

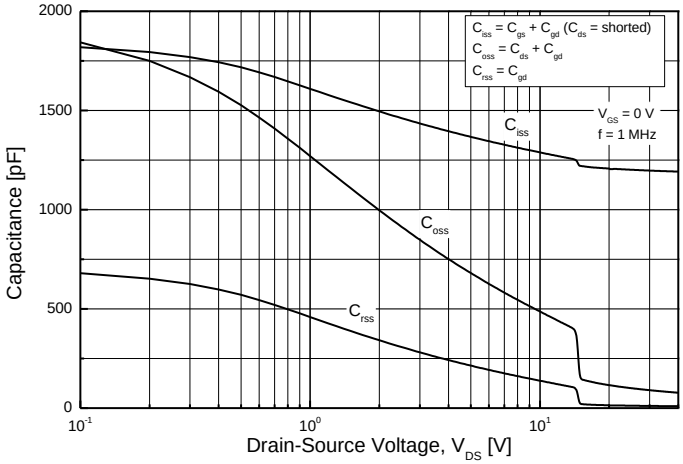
Parameter	Symbol	Test condition	Min	Typ	Max	Units
OFF						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V, I_D = 250 µA	650	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 650 V, V_{GS} = 0 V	--	--	1	µA
		V_{DS} = 520 V, T_C = 125°C	--	--	10	µA
Forward Gate-Source Leakage Current	I_{GSSF}	V_{GS} = 30 V, V_{DS} = 0 V	--	--	100	µA
Reverse Gate-Source Leakage Current	I_{GSSR}	V_{GS} = -30 V, V_{DS} = 0 V	--	--	-100	µA
ON						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 µA	2	--	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 3.25 A	--	1.2	1.4	Ω
Forward Transconductance (Note 4)	g_{FS}	V_{DS} = 30 V, I_D = 3.25 A	--	8	--	S
DYNAMIC						
Input Capacitance	C_{iss}	V_{DS} = 25 V, V_{GS} = 0 V, f = 1.0 MHz	--	1201	--	pF
Output Capacitance	C_{oss}		--	100	--	pF
Reverse Transfer Capacitance	C_{rss}		--	12	--	pF
SWITCHING						
Turn-On Delay Time (Note 4,5)	$t_{d(on)}$	V_{DD} = 325 V, I_D = 6.5 A, R_G = 25	--	30	--	ns
Turn-On Rise Time (Note 4,5)	t_r		--	33	--	ns
Turn-Off Delay Time (Note 4,5)	$t_{d(off)}$		--	126	--	ns
Turn-Off Fall Time (Note 4,5)	t_f		--	32	--	ns
Total Gate Charge (Note 4,5)	Q_g	V_{DS} = 520V, I_D = 6.5 A, V_{GS} = 10 V	--	27	--	nC
Gate-Source Charge (Note 4,5)	Q_{gs}		--	5	--	nC
Gate-Drain Charge (Note 4,5)	Q_{gd}		--	12	--	nC
SOURCE DRAIN DIODE						
Maximum Continuous Drain-Source Diode Forward Current	I_S	----	--	--	6.5	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}	----	--	--	26	A
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = 6.5 A	--	--	1.5	V
Reverse Recovery Time (Note 4)	t_{rr}	V_{GS} = 0 V, I_S = 6.5 A	--	418	--	ns
Reverse Recovery Charge (Note 4)	Q_{rr}	dI_F / dt = 100 A/µs	--	3.3	--	µC

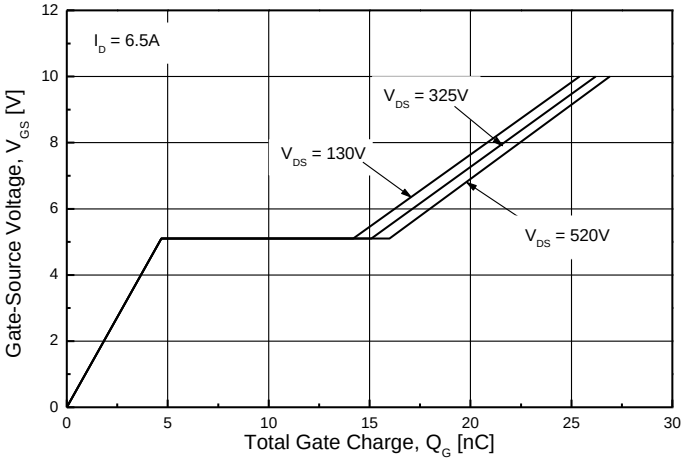
Note :
1. Repeated rating : Pulse width limited by safe operating area
2. L=18.4mH, I_{AS} = 6.5A, V_{DD} = 50V, R_G = 25 , Starting T_J= 25
3 I_{SD} 6.5A, di/dt µs , V_{DD} $_{DS}$, Starting T_J= 25
µ
5. Essentially Independent of Operating Temperature Typical Characteristics

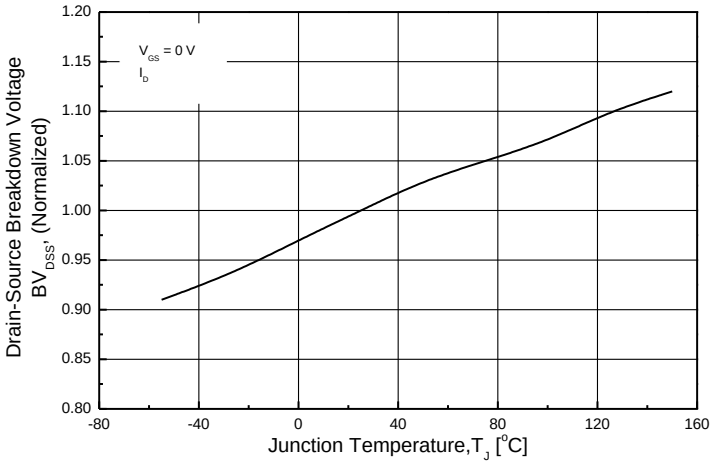

Top V_{GS}=15.0V
10.0V
9.0V
8.0V
7.0V
6.0V
5.5V
Bottom 5.0V
1. T_C = 25
15.0
12.5
10.0
7.5
5.0
2.5
0.0
0
5
10
15
20

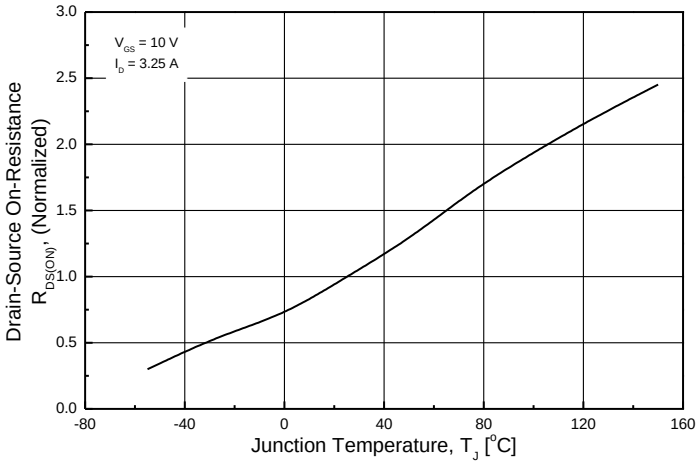

2.0
1.5
1.0
0.5
0
2
4
6
8
10
12
14

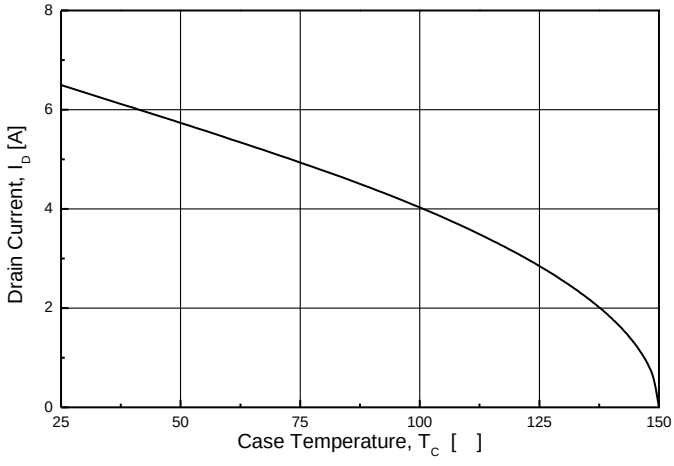

25
20
15
10
5
0
150
0.0
0.5
1.0
1.5
2.0

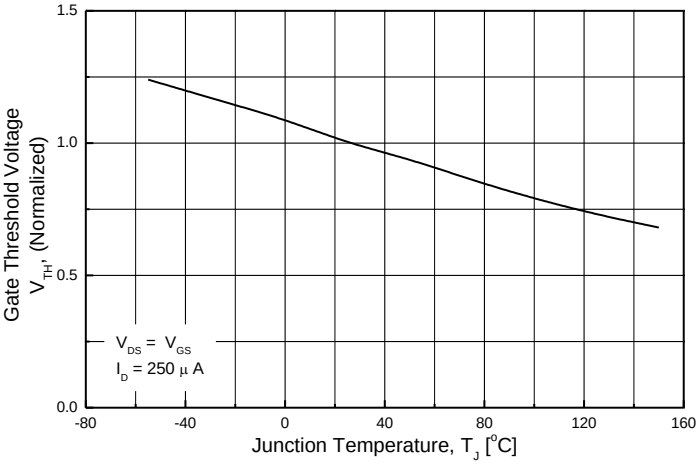

$C_{iss} = C_{gs} + C_{gd}$ (C_{ds} = shorted)
$C_{oss} = C_{ds} + C_{gd}$
$C_{rss} = C_{gd}$
V_{GS} = 0 V
f = 1 MHz
C_{iss}
C_{oss}
C_{rss}
Capacitance [pF]
Drain-Source Voltage, V_{DS} [V]
2000
1500
1000
500
0
10^{-1}
10^{0}
10^{1}

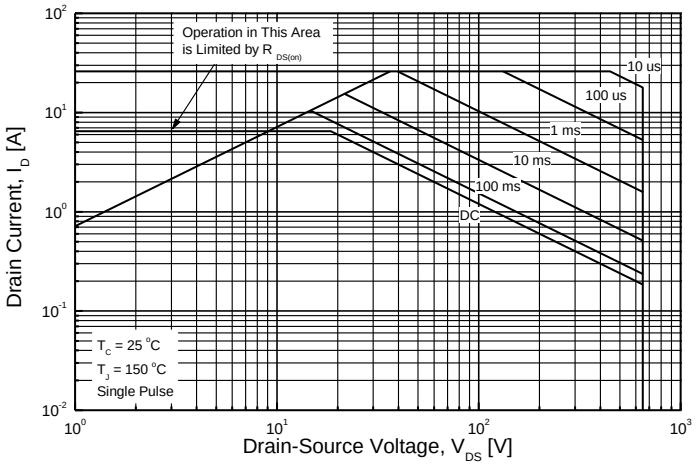

I_D = 6.5A
V_{DS} = 325V
V_{DS} = 130V
V_{DS} = 520V
Gate-Source Voltage, V_{GS} [V]
Total Gate Charge, Q_G [nC]
12
10
8
6
4
2
0
0
5
10
15
20
25
30

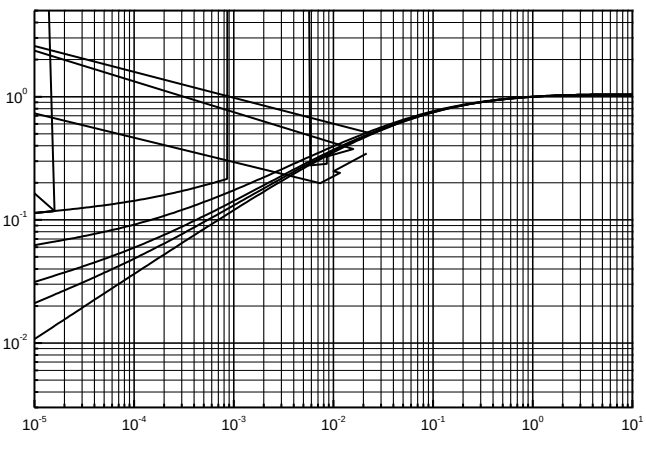

Drain-Source Breakdown Voltage
BVDSS, (Normalized)
VGS = 0 V
ID
Junction Temperature,TJ [°C]


Drain-Source On-Resistance
RDS(ON), (Normalized)
VGS = 10 V
ID = 3.25 A
Junction Temperature, TJ [°C]

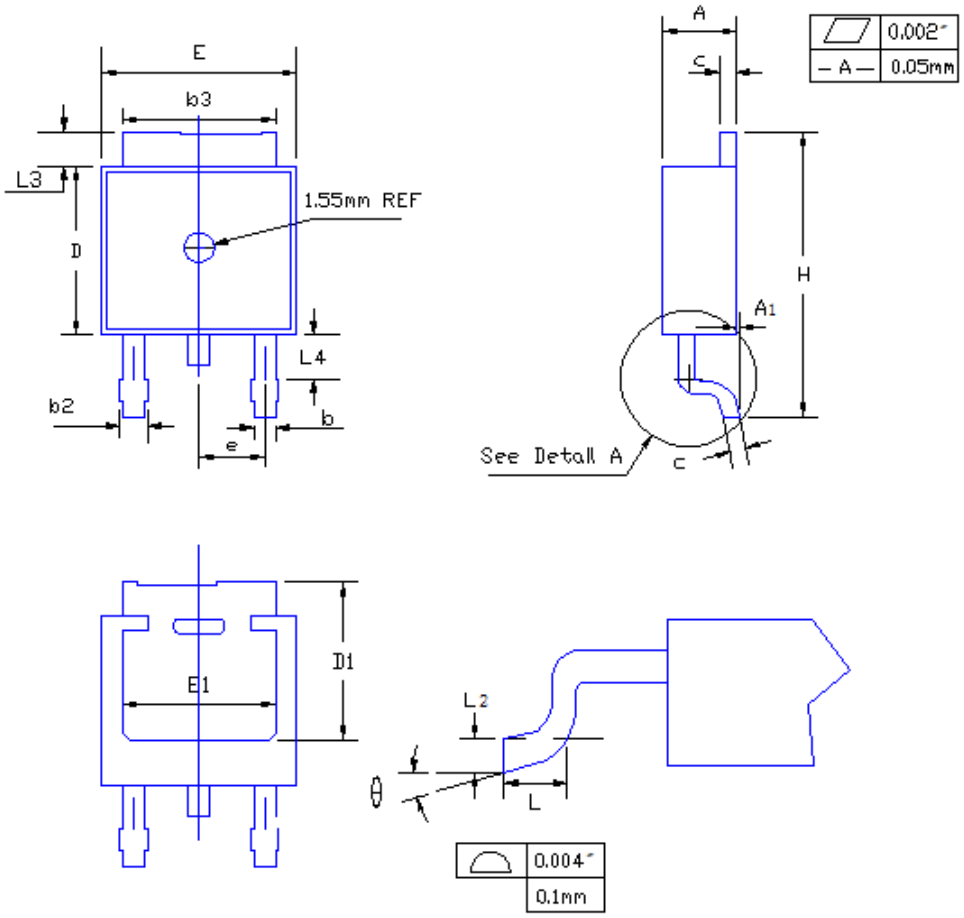

Drain Current, ID [A]
Case Temperature, TC [ ]


Gate Threshold Voltage
VTH, (Normalized)
VDS = VGS
ID = 250 μ A
Junction Temperature, TJ [°C]


Operation in This Area
is Limited by RDS(on)
10 us
100 us
1 ms
10 ms
100 ms
DC
TC = 25 °C
TJ = 150 °C
Single Pulse
Drain Current, ID [A]
Drain-Source Voltage, VDS [V]

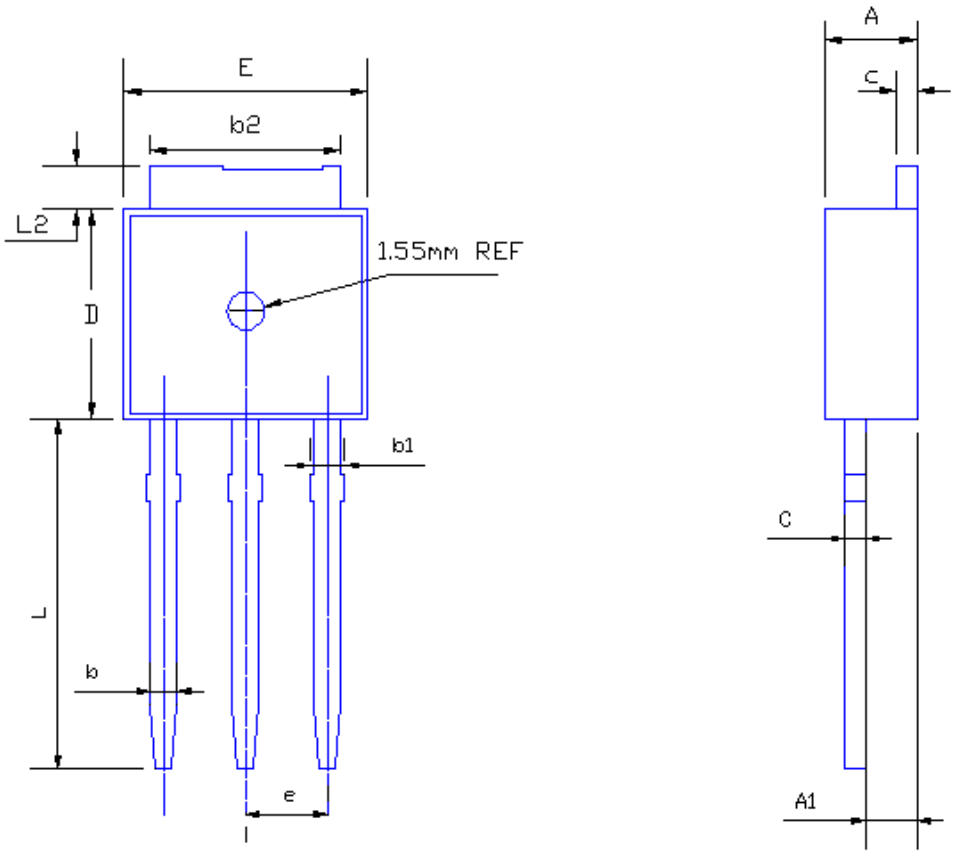


TO-252 (D-PAK) MECHANICAL DATA



SYMBOL	MILLIMETERS	
	MIN	MAX
A	2.19	2.38
A1	–	0.13
b	0.64	0.89
b2	0.84	1.14
b3	5.21	5.46
c	0.46	0.61
D	5.97	6.22
D1	5.21	—
E	6.35	6.73
E1	4.83	—
e	2.29BSC	
H	9.65	10.41
L	1.40	1.78
L2	0.51BSC	
L3	0.89	1.27
L4	0.64	1.01
θ	0	8

TO-251 (I-PAK) MECHANICAL DATA



SYMBOL	MILLIMETERS	
	MIN	MAX
A	2.19	2.38
A1	1.04	1.23
b	0.64	0.89
b1	0.84	1.14
b2	5.23	5.48
c	0.46	0.61
D	5.91	6.28
E	6.21	6.59
e	2.28 TYP	
L	8.89	9.65
L2	0.89	1.27