
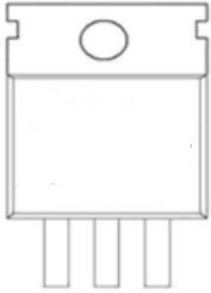
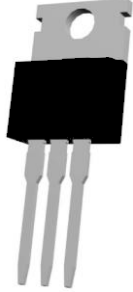
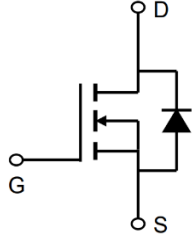




TMGN40100P

N-Channel Enhancement Mosfet

<p>General Description</p> <ul style="list-style-type: none"> • Low $R_{DS(ON)}$ • RoHS and Halogen-Free Compliant <p>Applications</p> <ul style="list-style-type: none"> • Load switch • PWM 	<p>General Features</p> <p>$V_{DS} = 40V$ $I_D = 100A$</p> <p>$R_{DS(ON)} = 3.1m\Omega$ (typ.) @ $V_{GS} = 10V$</p> <p>100% UIS Tested 100% R_g Tested</p> 
--	--

 <p>Marking: 100N04</p>	<p>P:TO-220AB</p>  <p>G D S</p> 
--	---

Absolute Maximum Ratings: ($T_C = 25^\circ C$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C = 25^\circ C$	100	
	Continuous Drain Current- $T_C = 125^\circ C$	59	A
I_{DM}	Pulsed Drain Current ²	240	
I_{AR}	Avalanche Current, Repetitive ²	20	A
E_{AS}	Single Pulse Avalanche Energy ³	170	mJ
P_D	Power Dissipation	89	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.4	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance Junction to ambient	50	$^\circ C/W$

TMGN40100P

N-Channel Enhancement Mosfet

Electrical Characteristics: ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu A$	40	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=40V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	± 100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu A$	1.2	1.8	2.4	V
$R_{DS(on)}$	Drain-Source On Resistance	$V_{GS}=10V, I_D=35A$	---	3.1	3.5	$m\ \Omega$
		$V_{GS}=4.5V, I_D=15A$	---	4.3	5	
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=20V, V_{GS}=0V, f=1MHz$	---	2900	---	pF
C_{oss}	Output Capacitance		---	758	---	
C_{rss}	Reverse Transfer Capacitance		---	50	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=20V, V_{GS}=10V, R_G=1.6\ \Omega, I_D=35A$	---	9	---	ns
t_r	Rise Time		---	32	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	32	---	ns
t_f	Fall Time		---	7	---	ns
Q_g	Total Gate Charge	$V_{GS}=10V, V_{DS}=20V, I_D=35A$	---	6.1	---	nC
Q_{gs}	Gate-Source Charge		---	4.7	---	nC
Q_{gd}	Gate-Drain "Miller" Charge		---	40	---	nC
Drain-Source Diode Characteristics						
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{SD}	Source-Drain Diode Forward Voltage ³	$V_{GS}=0V, I_S=35A$	---	0.84	---	V
t_{rr}	Continuous Source Current	$V_R=20V, I_F=35A, dI_F/dt=100A/us$	---	52	---	ns
q_{rr}	Pulsed Source Current		---	91	---	nC

Notes:

- Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
- Repetitive Rating: Pulse width limited by maximum junction temperature
- $I_{AS}=20.0A, V_{DD}=20V, R_G=25\ \Omega, \text{Starting } T_J=25^\circ\text{C}$

TMGN40100P

N-Channel Enhancement Mosfet

Typical Characteristics: ($T_C=25^\circ\text{C}$ unless otherwise noted)

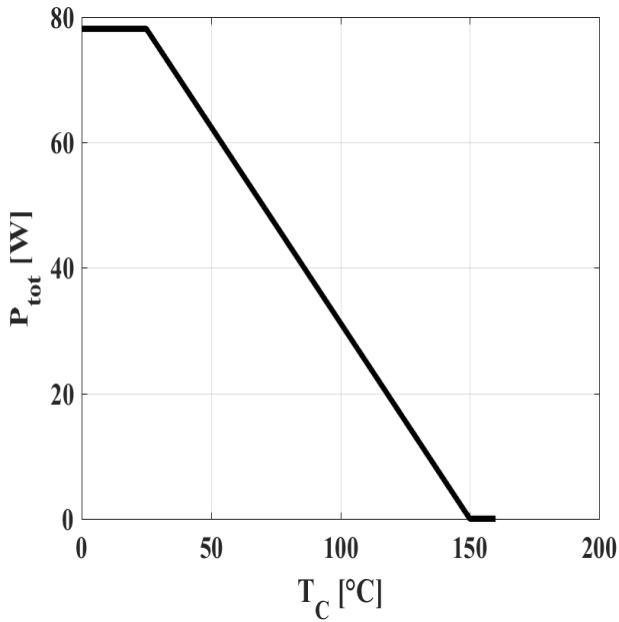


Figure 1: Power Dissipation

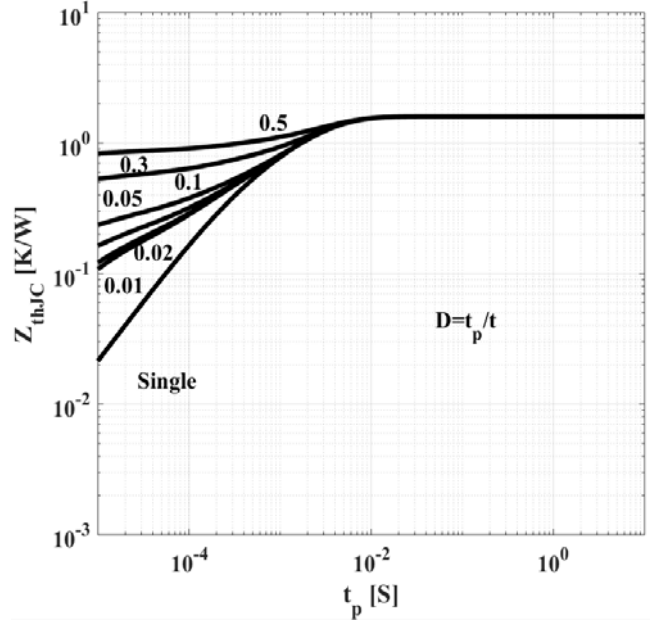


Figure 2: Max. Transient Thermal Impedance

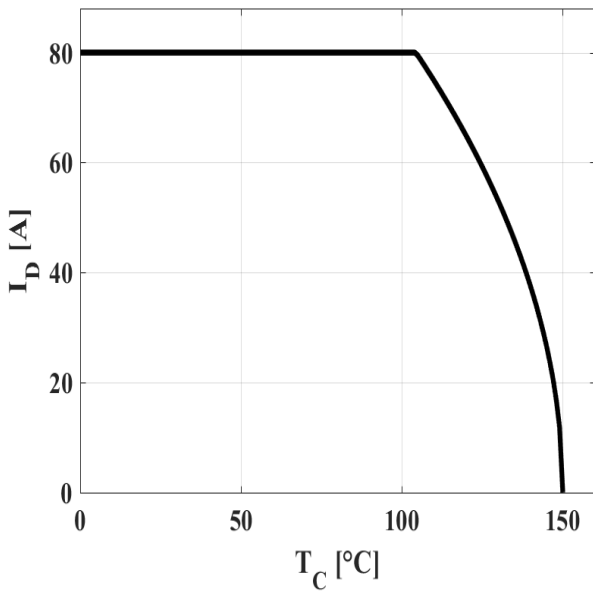


Figure 3: Drain Current

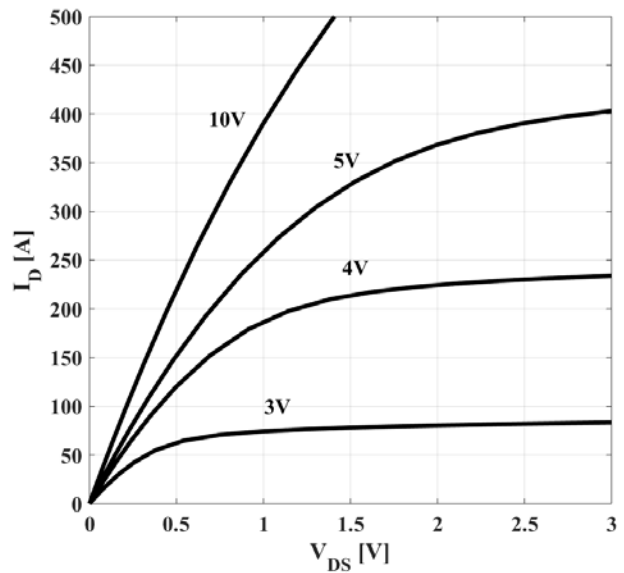


Figure 4: Typ. Output Characteristics



TMGN40100P

N-Channel Enhancement Mosfet

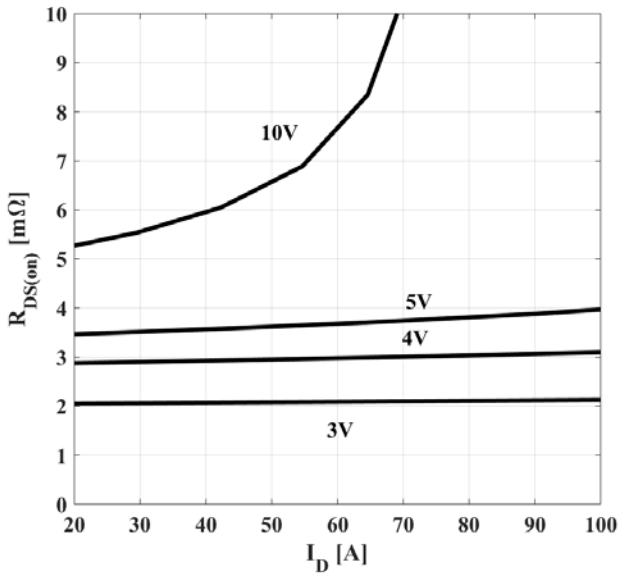


Figure5: Typ. Drain-Source On-State Resistance

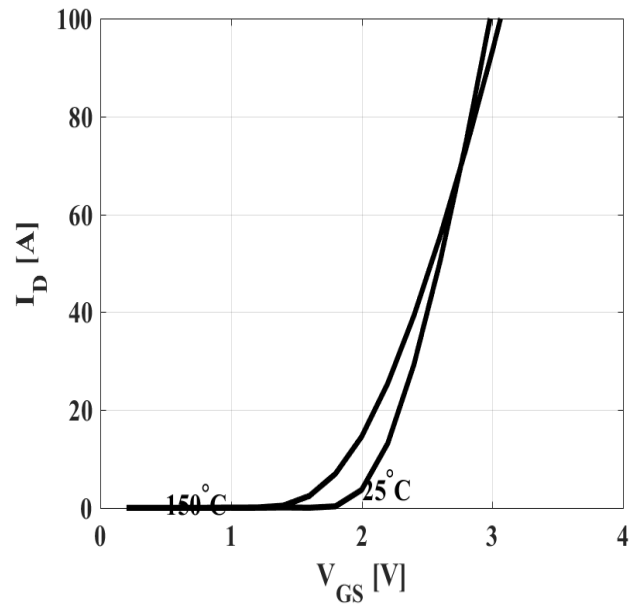


Figure6: Typ. Transfer Characteristics

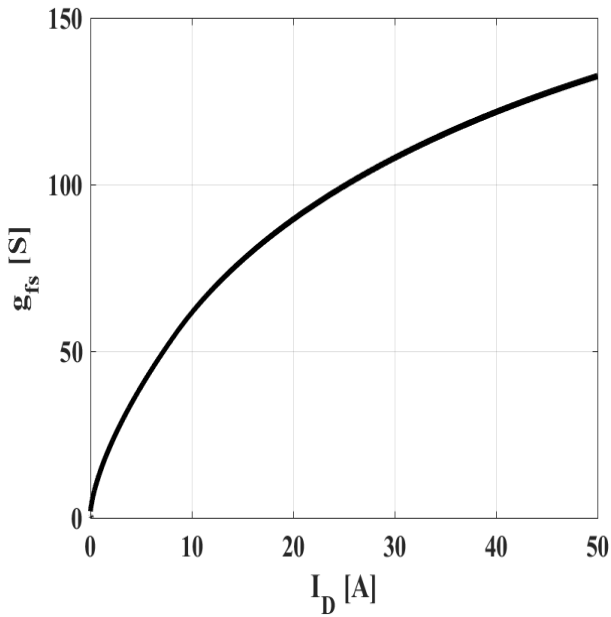


Figure7: Typ. Forward Transconductance

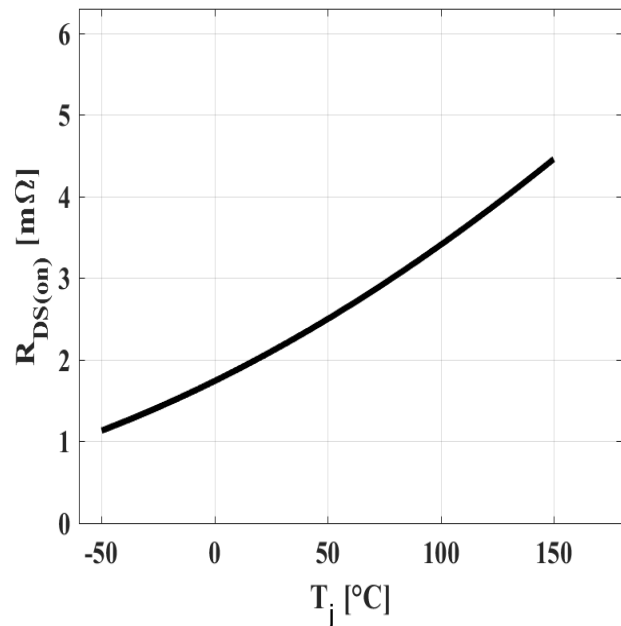


Figure8: Typ. Drain-Source On-State Resistance

TMGN40100P

N-Channel Enhancement Mosfet

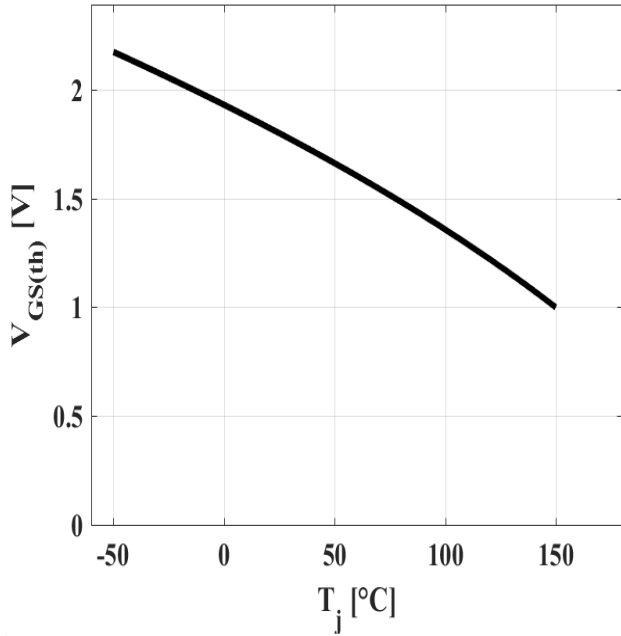


Figure 9: Typ. Gate Threshold Voltage

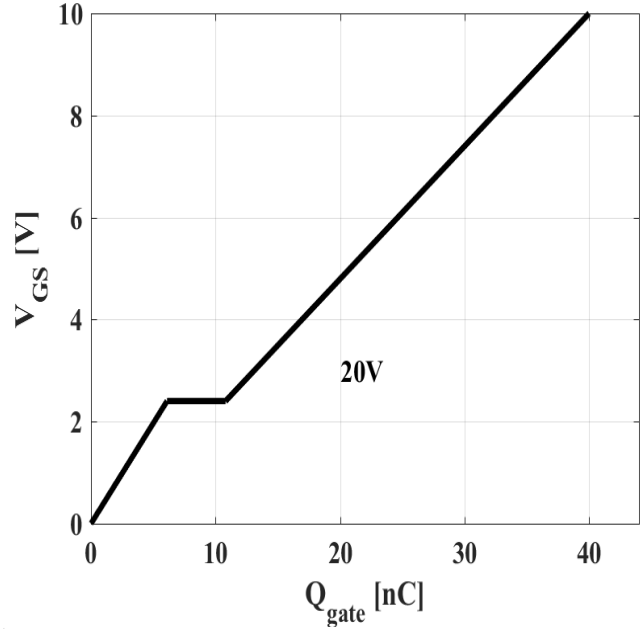


Figure 10: Typ. Gate Charge

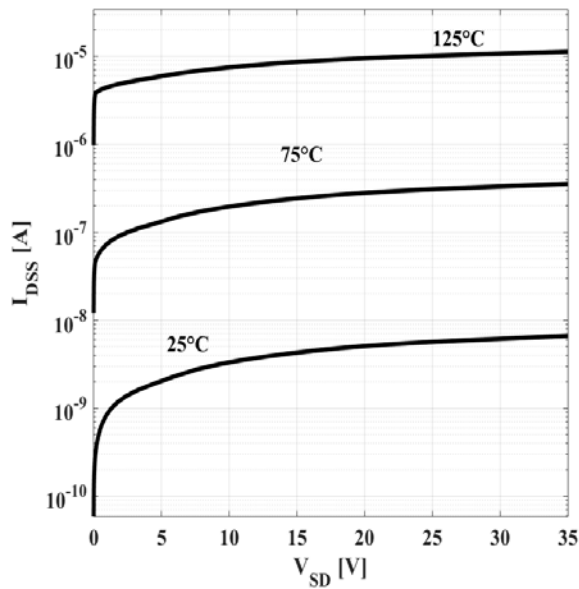


Figure 11: Drain-Source Leakage Current

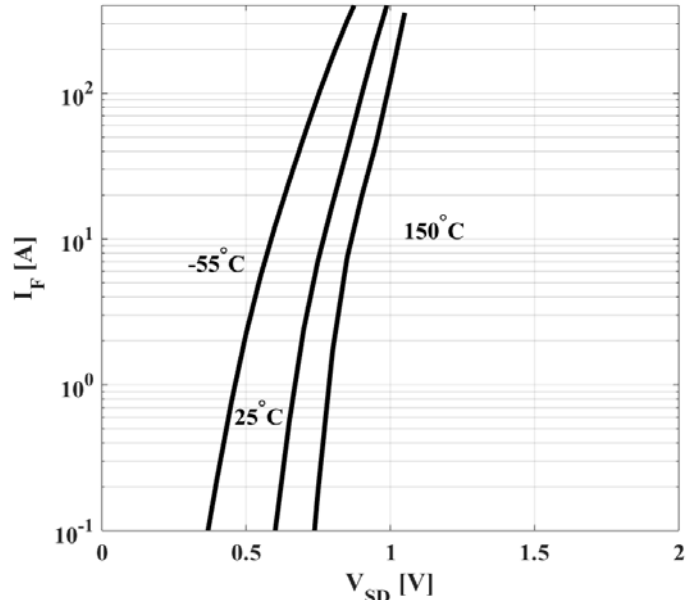


Figure 12: Forward Characteristics of Reverse Diode



TMGN40100P

N-Channel Enhancement Mosfet

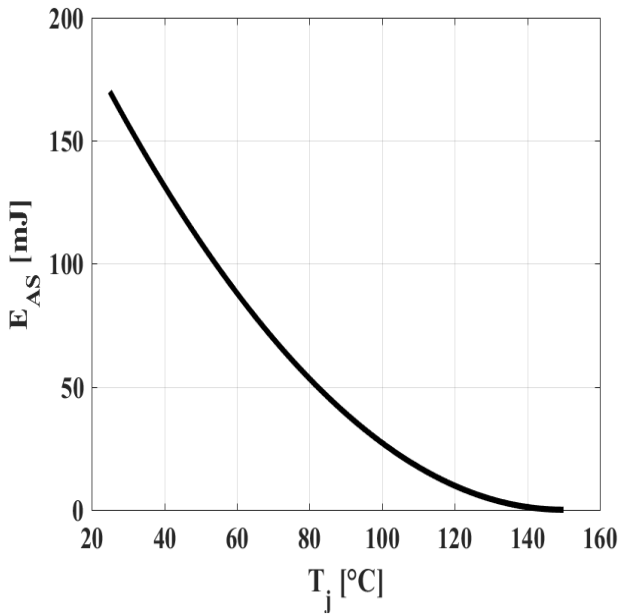


Figure 13: Avalanche Energy

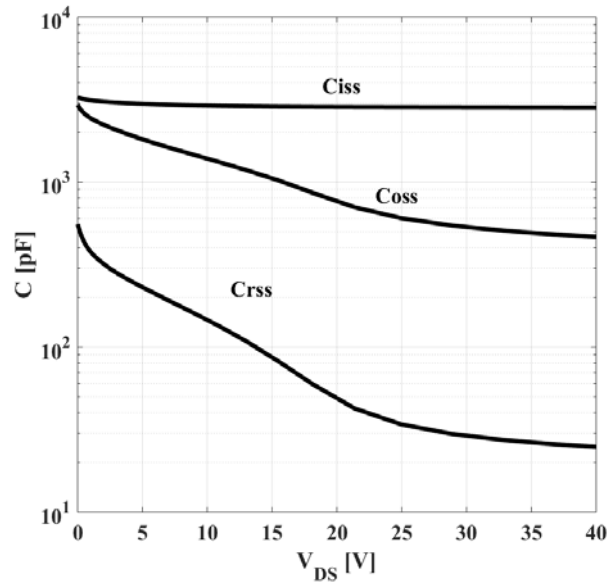


Figure 14: Typ. Capacitances

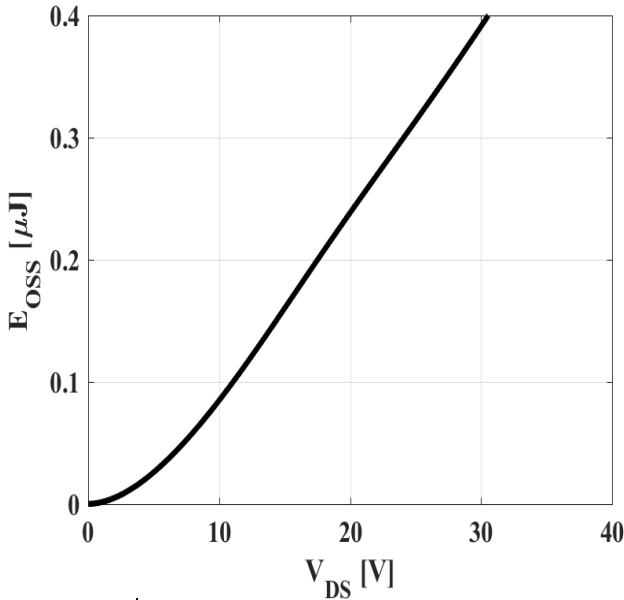
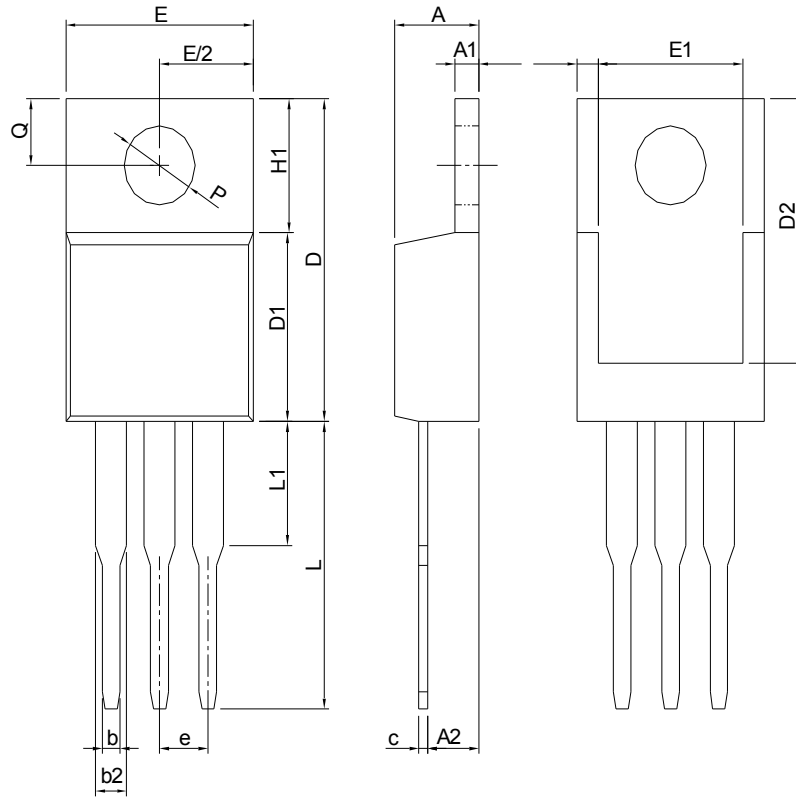


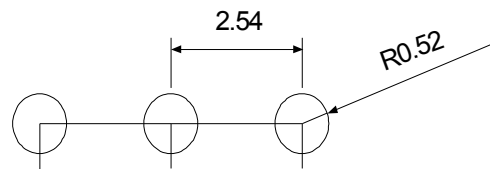
Figure 15: C_{oss} Stored Energy

Package Information: TO-220AB



DIMENSIONS	TO-220			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	3.56	4.83	0.140	0.190
A1	0.51	1.40	0.020	0.055
A2	2.03	2.92	0.080	0.115
b	0.38	1.02	0.015	0.040
b2	1.14	1.78	0.045	0.070
c	0.36	0.61	0.014	0.024
D	14.22	16.51	0.560	0.650
D1	8.38	9.02	0.330	0.355
D2	12.19	13.65	0.480	0.537
E	9.65	10.67	0.380	0.420
E1	6.86	8.89	0.270	0.350
e	2.54 BSC		0.100 BSC	
H1	5.84	6.86	0.230	0.270
L	12.70	14.73	0.500	0.580
L1	-	6.35	-	0.250
P	3.53	4.09	0.139	0.161
Q	2.54	3.43	0.100	0.135

RECOMMENDED LAND PATTERN



UNIT: mm

Note: Follow JEDEC TO-220 AB.

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