

Features

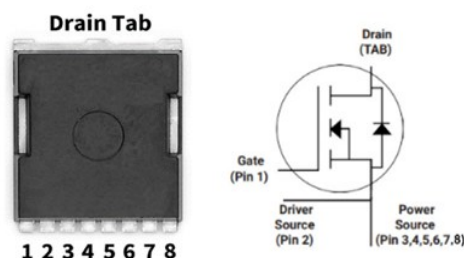
- High Blocking Voltage with Low On-Resistance
- High Speed Switching with Low Capacitances
- Avalanche Ruggednes

Product Summary

V_{DS}	750V
$R_{DS(on)_{typ}}$	11mΩ
I_D	182A

Applications

- Solar Inverters
- Switch Mode Power Supplies
- High Voltage DC-DC Converters
- Battery Chargers



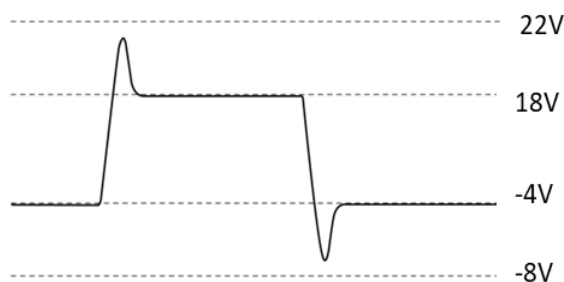
Package Marking and Ordering Information

Part #	Marking	Package
T2M11075T	2M11075T	TOLL

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	750	V
Continuous drain current $T_C = 25^\circ\text{C}$, $V_{GS} = 18\text{V}$ $T_C = 125^\circ\text{C}$, $V_{GS} = 18\text{V}$	I_D	182 105	A
Source current(Body Diode) $T_C = 25^\circ\text{C}$, $V_{GS} = -4\text{V}$ $T_C = 125^\circ\text{C}$, $V_{GS} = -4\text{V}$	I_S	182 105	A
Pulsed drain current ($T_C = 25^\circ\text{C}$, t_p limited by T_{jmax})	I_{DM}	300	A
Avalanche energy, single pulse ($L=10\text{mH}$)	E_{AS}	4400	mJ
Gate-Source voltage	V_{GS}	-4/+18	V
Gate-Source voltage (Absolute maximum values)	V_{GSmax}	-8/+22	V
Power dissipation ($T_C = 25^\circ\text{C}$)	P_{tot}	600	W
Operating junction and storage temperature	T_j, T_{stg}	-55...+175	$^\circ\text{C}$

- Example of acceptable V_{GS} waveform



Thermal Resistance

Parameter	Symbol	Value	Unit
Thermal resistance, junction – case. Max	R_{thJC}	0.25	°C/W
Thermal resistance, junction – ambient. Max	R_{thJA}	40	

Electrical Characteristic (at $T_j = 25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		

Static Characteristic

Drain-source breakdown voltage	$V_{(BR)DSS}$	750	-	-	V	$V_{GS}=0V, I_D=100\mu A$
Gate threshold voltage	$V_{GS(th)}$	2	2.8	4	V	$V_{DS}=V_{GS}, I_D=36mA$
Zero gate voltage drain current	I_{DSS}	-	1	5	μA	$V_{DS}=750V, V_{GS}=0V$ $T_C=25^\circ C$
		-	5	-		$T_C=175^\circ C$
Gate-source leakage current	I_{GSS}	-		100	nA	$V_{GS}=18V, V_{DS}=0V$
Drain-source on-state resistance	$R_{DS(on)}$	-	11	13	mΩ	$V_{GS}=18V, I_D=80A,$ $T_j=25^\circ C$
		-	16	-		$T_j=175^\circ C$
Drain-source on-state resistance	$R_{DS(on)}$	-	14	18	mΩ	$V_{GS}=15V, I_D=80A,$ $T_j=25^\circ C$
		-	18	-		$T_j=175^\circ C$

Dynamic Characteristic

Input Capacitance	C _{ISS}	-	4646	-	pF	V _{DS} = 600V V _{GS} = 0V T _J = 25°C V _{AC} =25mV f = 1MHz
Output Capacitance	C _{OSS}	-	303	-		
Reverse Transfer Capacitance	C _{RSS}	-	13.8	-		
Gate Total Charge	Q _G	-	182	-	nC	V _{DS} = 600V V _{GS} = 0/+18V I _D = 80A I _G =10mA
Gate-Source charge	Q _{gs}	-	54.3	-		
Gate-Drain charge	Q _{gd}	-	66.7	-		
Turn-On Switching Energy	E _{ON}	-	785	-	uJ	V _{DD} = 600V V _{GS} = -4/+18V I _D = 80A R _G = 5Ω L = 100uH T _J = 25°C
Turn-Off Switching Energy	E _{OFF}	-	434	-		
Turn-on delay time	t _{d(on)}	-	41	-	ns	
Rise time	t _r	-	11	-		
Turn-off delay time	t _{d(off)}	-	56	-		
Fall time	t _f	-	14	-		
Gate resistance	R _G	-	2.0	-	Ω	V _{AC} = 25mV, f=1MHz

Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Body Diode Forward Voltage	V_{SD}		4.2		V	$V_{GS} = -4V, I_{SD} = 40A,$ $T_J = 25^\circ C$
			3.8			$V_{GS} = -4V, I_{SD} = 40A,$ $T_J = 175^\circ C$
Reverse Recovery Time	t_{rr}	-	24.1	-	ns	$V_R = 600V$ $I_D = 80A$ $di/dt = 1000A/\mu S$ $V_{GS} = -4V$ $T_J = 25^\circ C$
Reverse Recovery Charge	Q_{rr}	-	168.8	-	nC	
Reverse Recovery Energy	E_{REC}	-	8.4	-	uJ	
Peak Reverse Recovery Current	I_{rrm}	-	12.3	-	A	
Charge Time	t_A	-	13.6	-	ns	
DisCharge Time	t_B	-	10.5	-	ns	
Reverse Recovery Time	t_{rr}	-	38	-	ns	$V_R = 600V$ $I_D = 80A$ $di/dt = 1000A/\mu S$ $V_{GS} = -4V$ $T_J = 175^\circ C$
Reverse Recovery Charge	Q_{rr}	-	268.6	-	nC	
Reverse Recovery Energy	E_{REC}	-	15.8	-	uJ	
Peak Reverse Recovery Current	I_{rrm}	-	15.1	-	A	
Charge Time	t_A	-	16.6	-	ns	
DisCharge Time	t_B	-	14.4	-	ns	

Typical Performance Characteristics

Fig 1. Output Characteristic (T_J=-55°C)

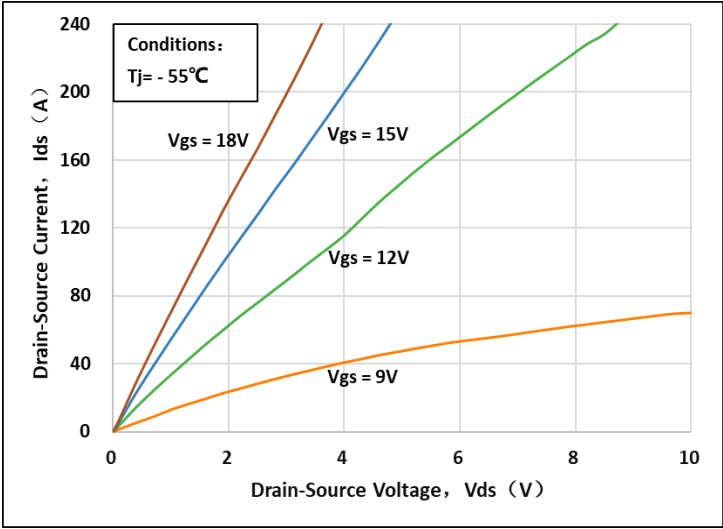


Fig 2. Output Characteristic (T_J=25°C)

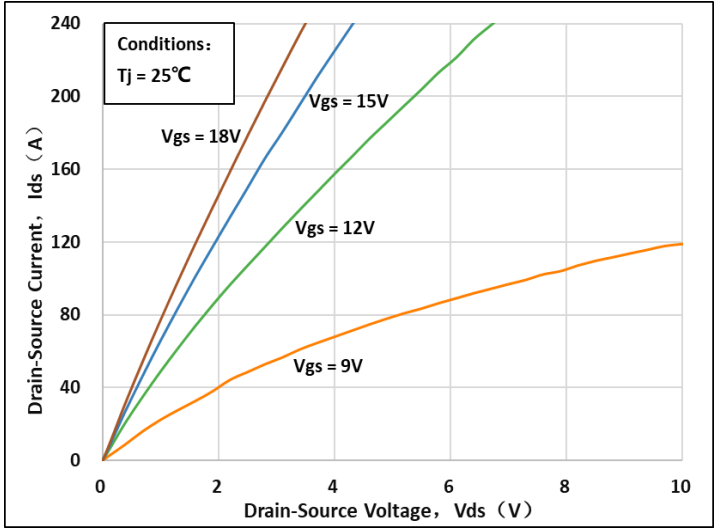


Fig 3. Output Characteristic (T_J=175°C)

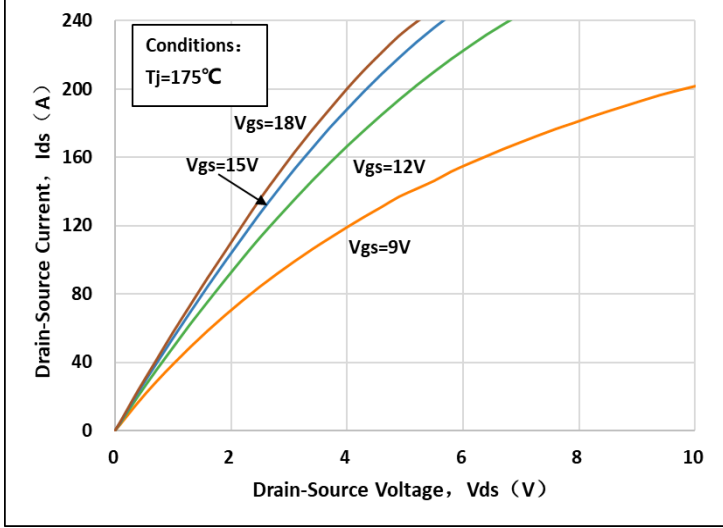


Fig 4: Rdson Vs Ids Characteristic

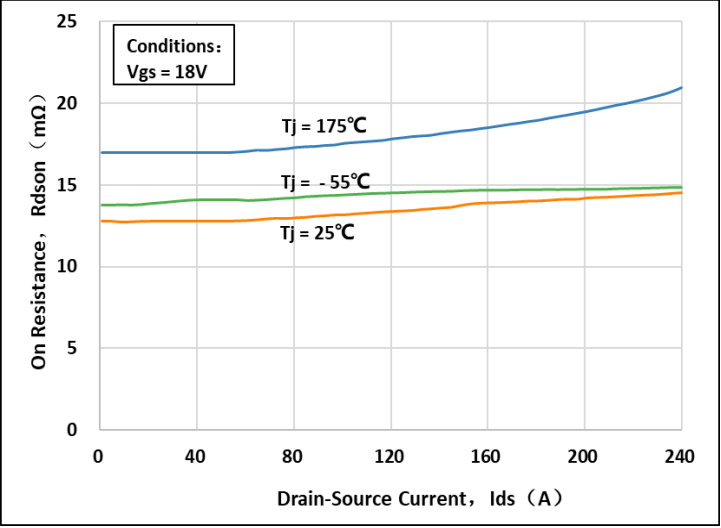


Fig 5: Rds(on) vs. Temperature

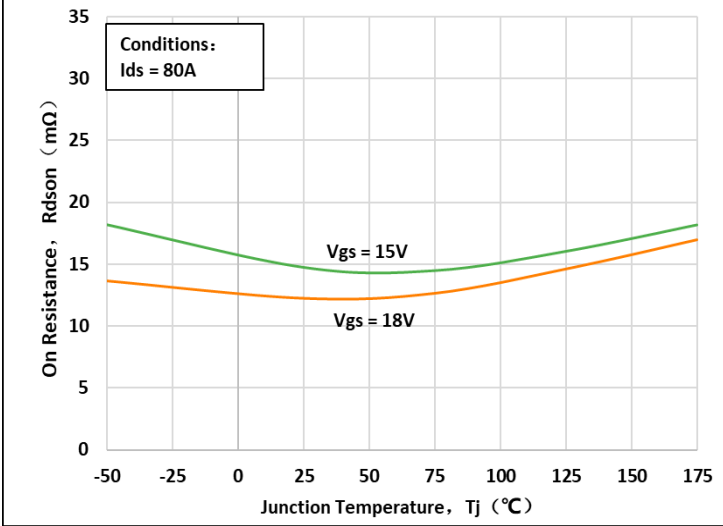


Fig 6: Transfer Characteristic

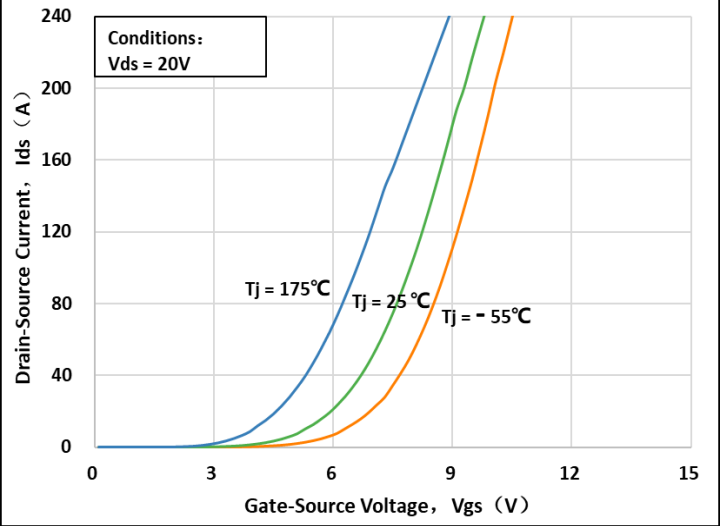


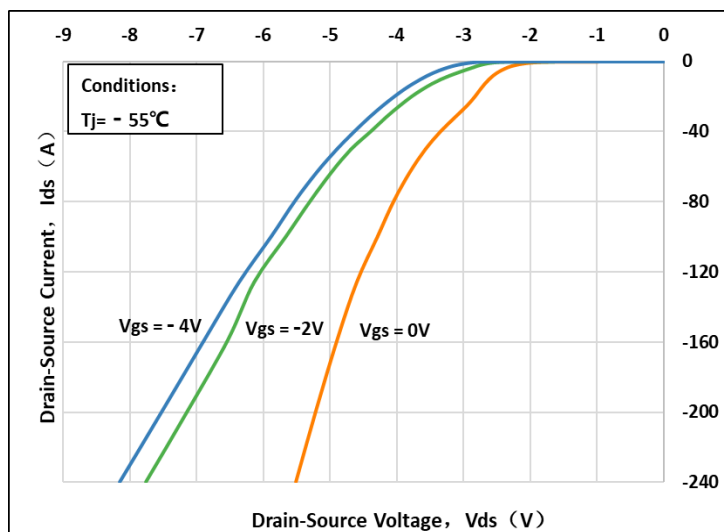
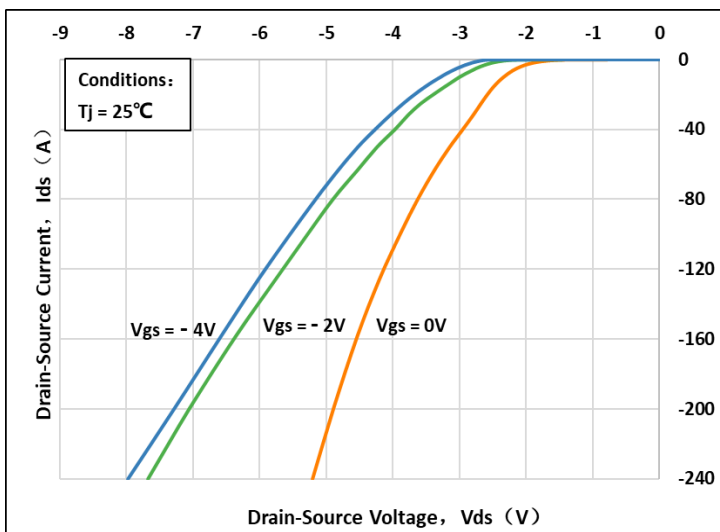
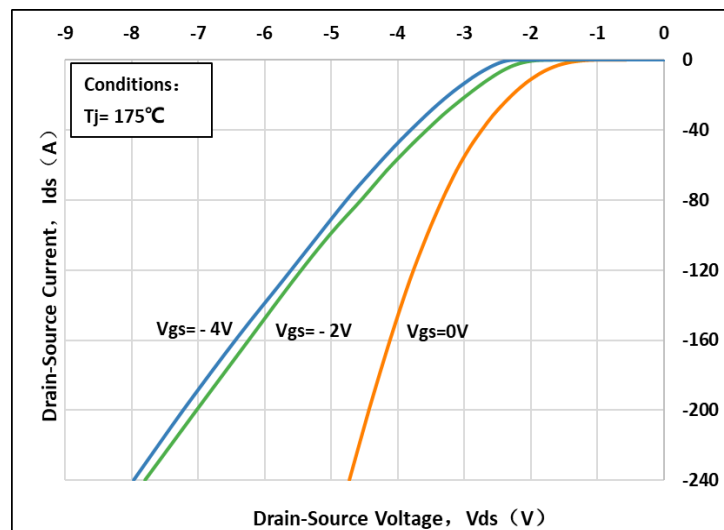
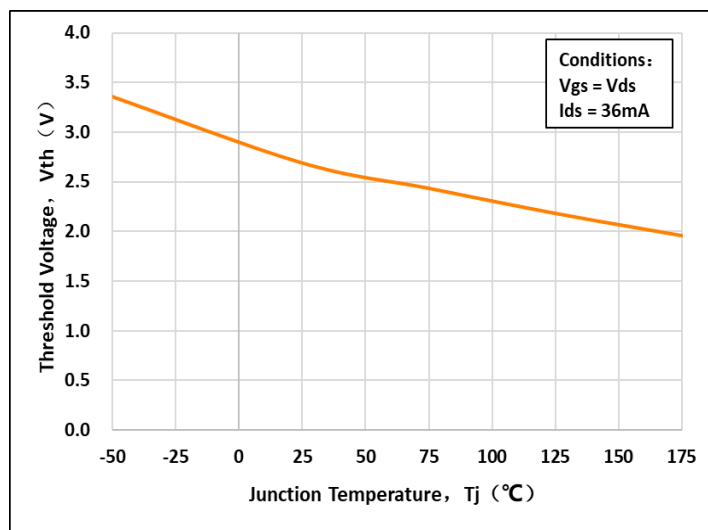
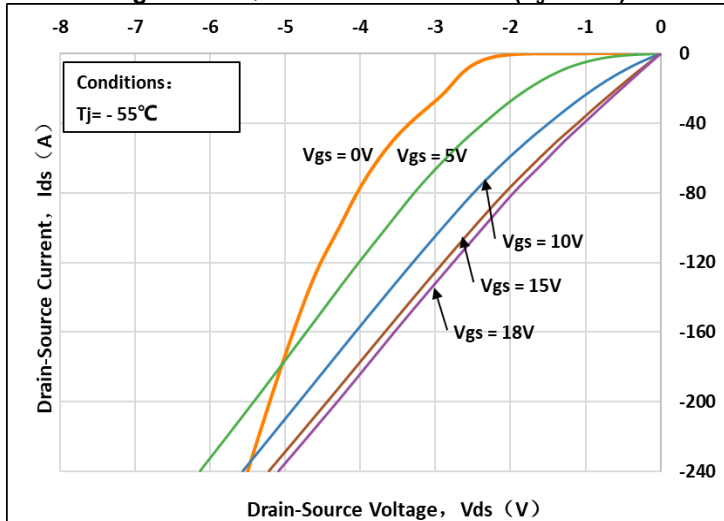
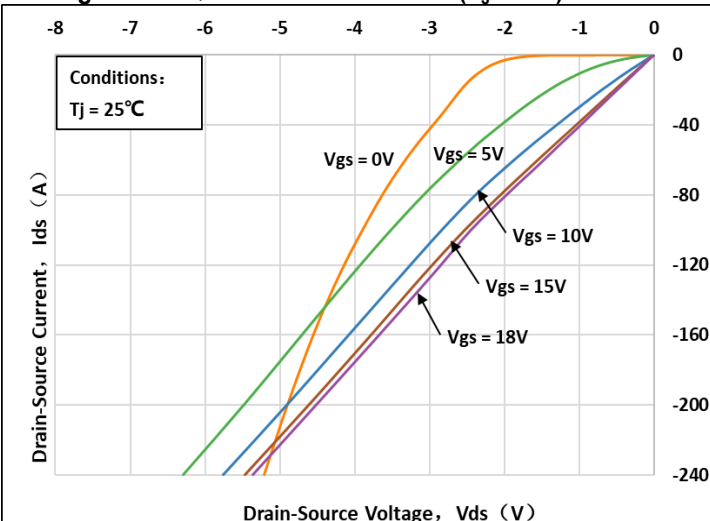
Fig 7: Body-diode Characteristic ($T_J = -55^\circ\text{C}$)Fig 8: Body-diode Characteristic ($T_J = 25^\circ\text{C}$)Fig 9: Body-diode Characteristic ($T_J = 175^\circ\text{C}$)Fig 10: V_{th} Vs T_J Temperature CharacteristicFig 11: 3rd Quadrant Characteristic ($T_J = -55^\circ\text{C}$)Fig 12: 3rd Quadrant Characteristic ($T_J = 25^\circ\text{C}$)

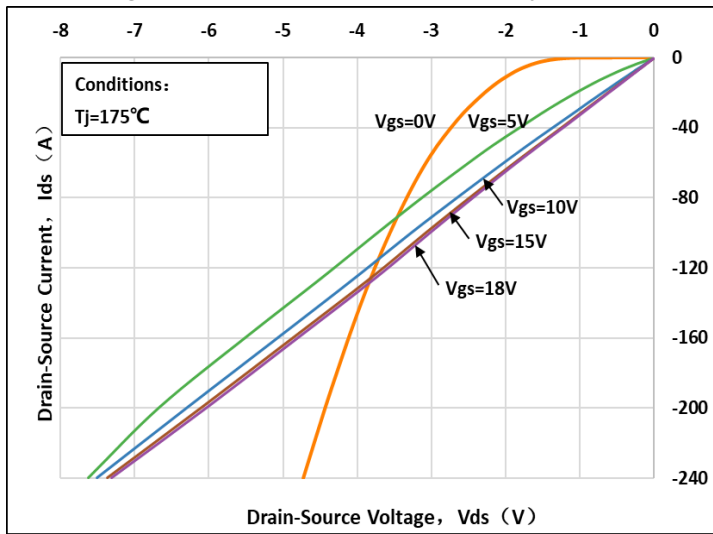
Fig 13: 3rd Quadrant Characteristic($T_J=175^\circ\text{C}$)

Fig 14: Gate Charge Characteristics

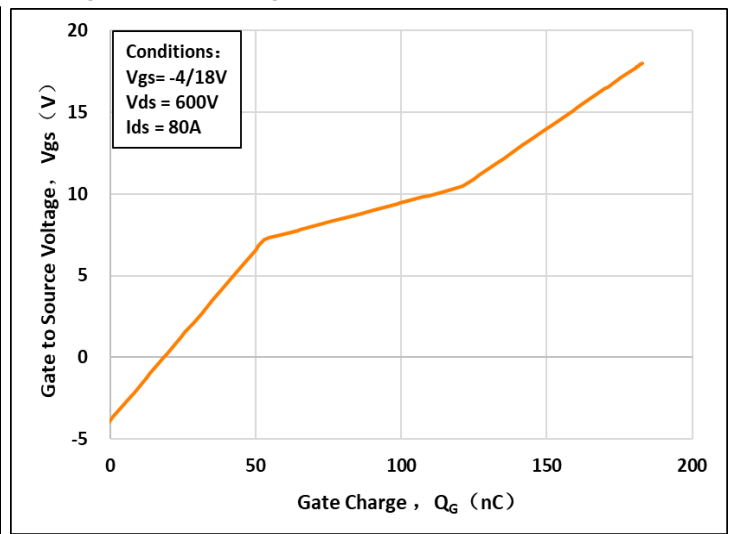


Fig 15: Drain Current vs. Case Temperature

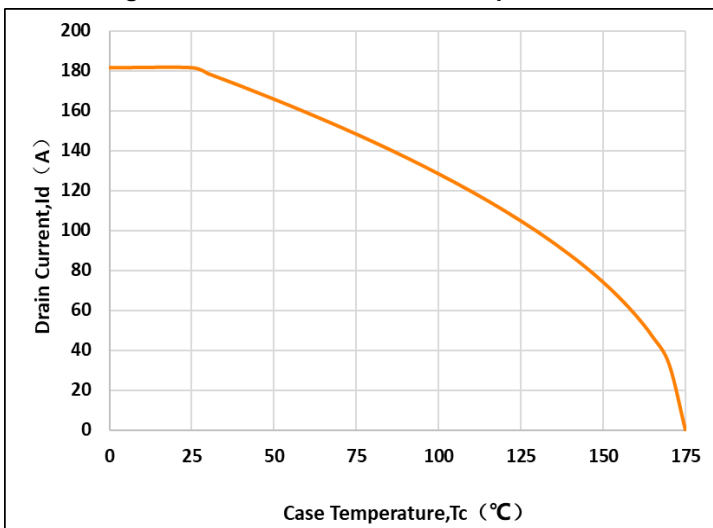


Fig 16: Safe Operating Area

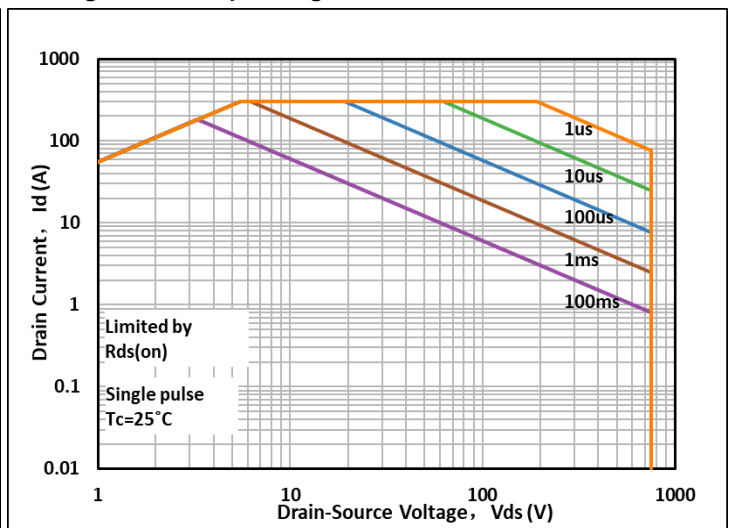


Fig 17: Capacitance Characteristics

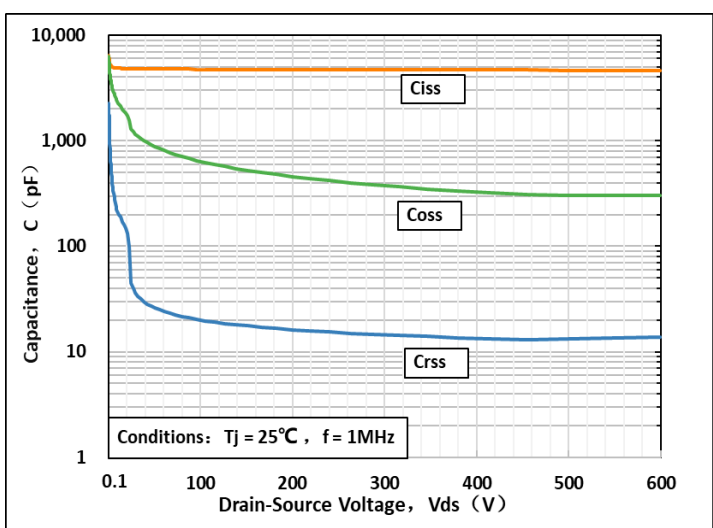
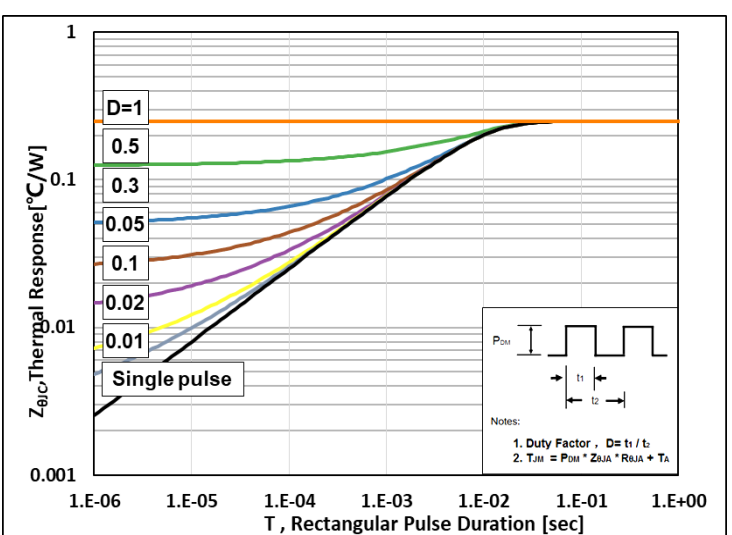
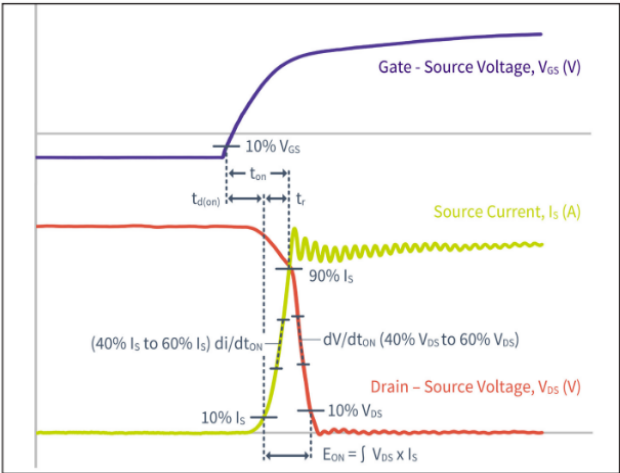


Fig 18: Transient Thermal Impedance

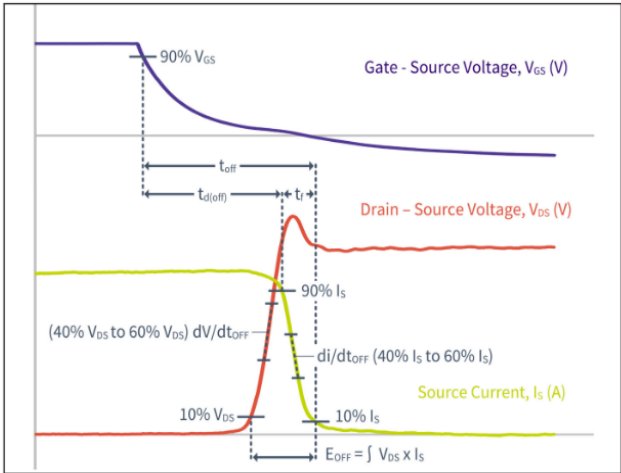


Test Circuit & Waveform

Figure A. Definition of switching times



Turn-on Transient Definitions



Turn-off Transient Definitions

Figure B. Dynamic test circuit

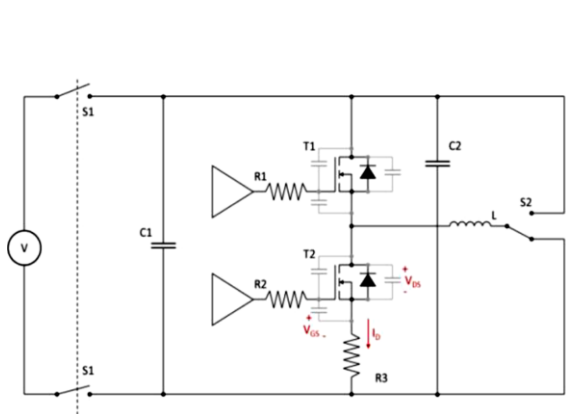
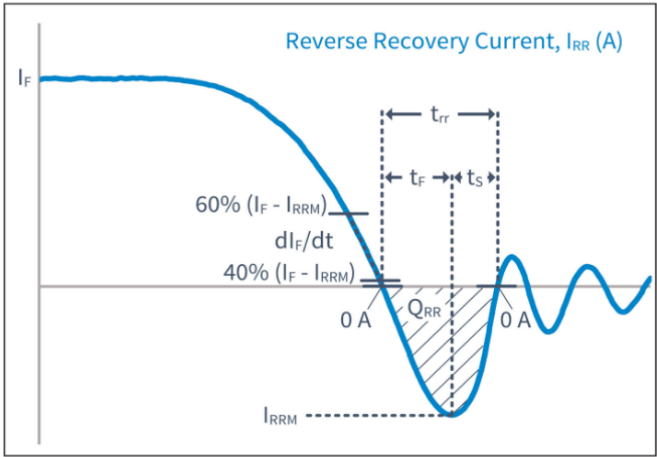
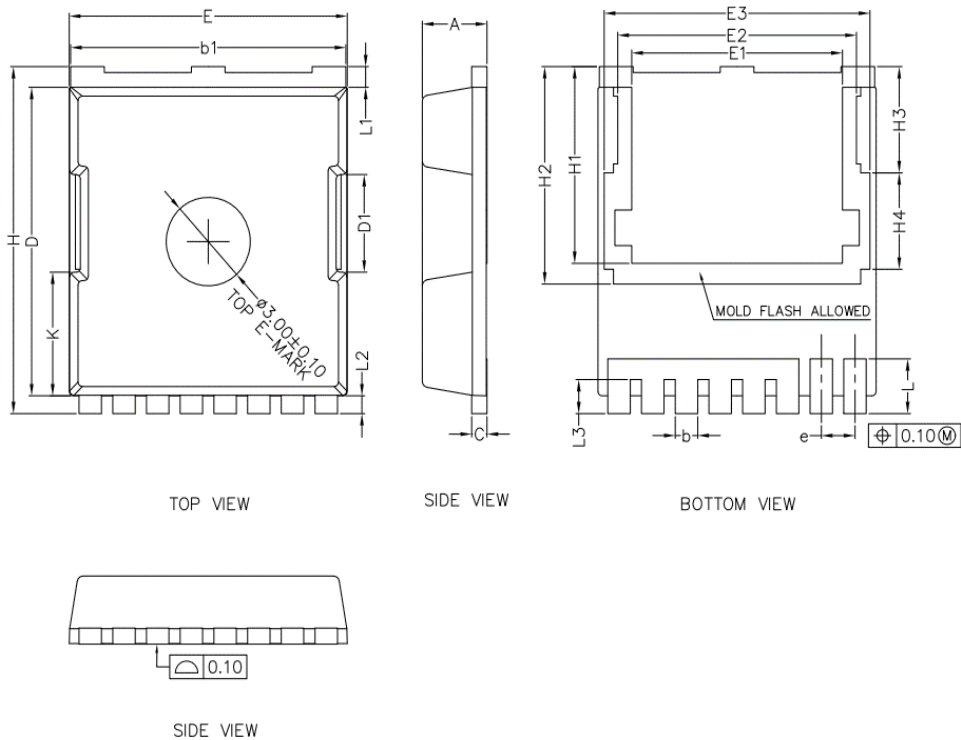


Figure C. Definition of body diodeswitching characteristics



Reverse Recovery Definitions

Package Outline:




COMMON DIMENSIONS (UNITS OF MEASURE=MILLIMETER)			
SYMBOL	MIN	NOM	MAX
A	2.20	2.30	2.40
b	0.70	0.80	0.90
b1	9.70	9.80	9.90
c	0.40	0.50	0.60
D	10.28	10.43	10.58
D1	3.15	3.30	3.45
E	9.70	9.90	10.10
E1	7.35	7.50	7.65
E2	8.35	8.50	8.65
E3	9.31	9.46	9.61
e	1.10	1.20	1.30
H	11.48	11.73	11.88
H1	6.55	6.65	6.75
H2	7.20	7.35	7.50
H3	3.44	3.59	3.74
H4	3.11	3.26	3.41
K	4.03	4.18	4.33
L	1.60	1.85	2.10
L1	0.55	0.70	0.85
L2	0.45	0.60	0.75
L3	1.00	1.15	1.30

NOTES: ALL DIMENSIONS DO NOT INCLUDE MOLD FLASH OR PROTRUSION.

Contact Information

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For additional information, please contact your local Sales Representative.

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