

Product Summary

V_{DS} (V)	$R_{DS(on),max}$ (mΩ)	I_D (A)
100	2.7 @ $V_{GS} = 10V$	254 ⁽¹⁾

Features

- ❖ Low $R_{DS(on)}$
- ❖ Trench power MOSFET
- ❖ Low Gate Charge

Application

- ❖ Stored energy
- ❖ Electric motorcycle

General Information

Shipping

- ❖ One shipping options is offered as standard
- ❖ Un-sawn wafer

Handling

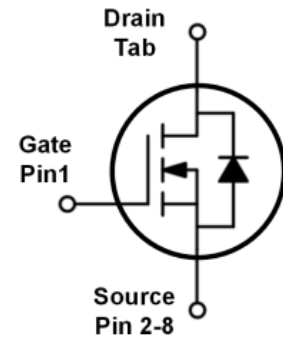
- ❖ Product must be handled only at ESD safe workstations. Standard ESD precautions and safe work environments are as defined in MIL-HDBK-263.
- ❖ Product must be handled only in a class 10,000 or better-designated clean room environment



TOLL

NOTE:
 LOGO - GS
 GMXXXX- Part number code
 F - Fab location code
 A - Assembly location code
 Y - Year code
 WW - Week code
 L&T - Assembly lot code

Equivalent circuit



Absolute maximum rating@25°C

Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{DS}	100	V
Gate-source voltage	V_{GS}	±20	
Continuous drain current	I_D	254	A
		178	
		34	
Pulsed drain current ⁽²⁾	$I_{D,pulse}$	1016	
Avalanche energy, single pulse ⁽³⁾	E_{AS}	1280	mJ
Power dissipation	P_D	278	W
		3.1	
Operating junction and storage temperature range	T_J, T_{stg}	-55 to 150	°C

Thermal Characteristic

Parameter	Symbol	Max.	Unit
Thermal resistance, junction-to-case	$R_{\theta JC}$	0.45	°C/W
Thermal resistance, junction-to-ambient ⁽⁴⁾	$R_{\theta JA}$	40	

Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Static parameter						
Drain to source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0, I _D = 250 μA	100			V
Gate-source threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	2.2	3	3.8	V
Gate-body leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero gate voltage drain current	I _{DSS}	V _{DS} = 100 V, V _{GS} = 0 V			1	μA
Drain-source on-resistance	R _{DS(on)}	V _{GS} = 10 V, I _D = 75 A		2.1	2.7	mΩ
Forward transconductance ⁽⁵⁾	g _{fs}	V _{DS} = 5 V, I _D = 75 A		150		S
Gate resistance	R _g	f = 1 MHz		1.3		Ω
Dynamic ⁽⁵⁾						
Total gate charge	Q _g	V _{DS} = 50 V, I _D = 75 A, V _{GS} = 10 V		140		nC
Gate-source charge	Q _{gs}			42		
Gate-drain charge	Q _{gd}			41		
Turn-on delay time	t _{d(on)}	V _{DS} = 50 V, I _D = 75 A, V _{GS} = 10 V, R _{GEN} = 6 Ω		66		ns
Rise time	t _r			75		
Turn-off delay time	t _{d(off)}			97		
Fall time	t _f			38		
Input capacitance	C _{iss}	V _{DS} = 50 V, V _{GS} = 0 V, f = 1 MHz		8510		pF
Output capacitance	C _{oss}			1100		
Reverse transfer capacitance	C _{rss}			43		
Reverse Diode Characteristics ⁽⁵⁾						
Diode forward voltage	V _{SD}	V _{GS} = 0 V, I _F = 75 A		0.88	1.2	V
Reverse recovery time	t _{rr}	V _{DS} = 50 V, I _F = 75 A, di/dt = 100 A/μs		64		ns
Reverse recovery charge	Q _{rr}			128		nC

Notes

- (1) Package limited.
- (2) Pulse width limited by maximum junction temperature.
- (3) V_{DS} = 75 V, V_{GS} = 10 V, L = 0.5 mH.
- (4) R_{θJA} is determined with the device mounted on a 1 in² pad 2 oz copper pad on a 1.5x1.5 in. board of FR-4 material.
- (5) Guaranteed by design, not subject to production testing.

Typical Performance Characteristics

Fig.1 Typ. transfer characteristics

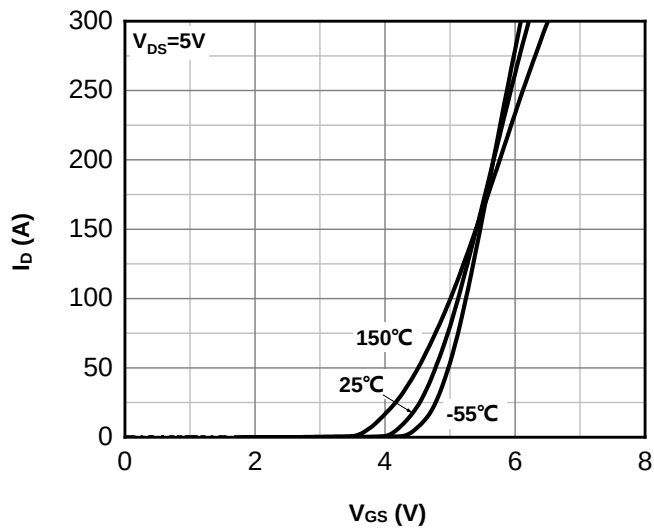


Fig.2 Typ. output characteristics

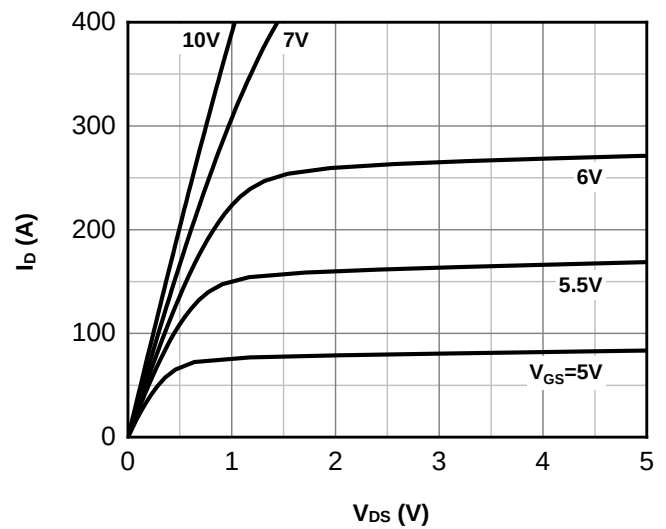


Fig.3 Normalized on-resistance vs drain current

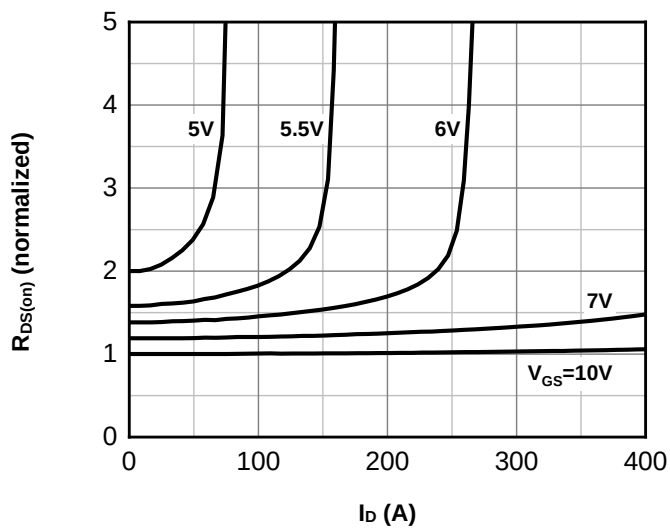


Fig.4 Typ. on-resistance vs gate-source voltage

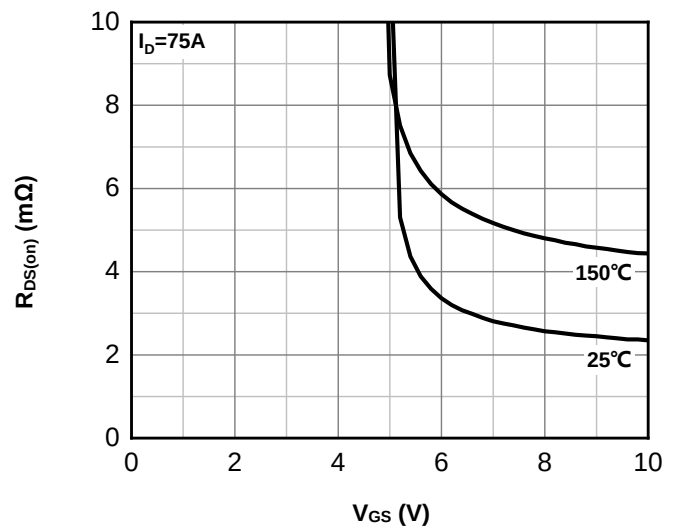


Fig.5 Normalized on-resistance vs junction temperature

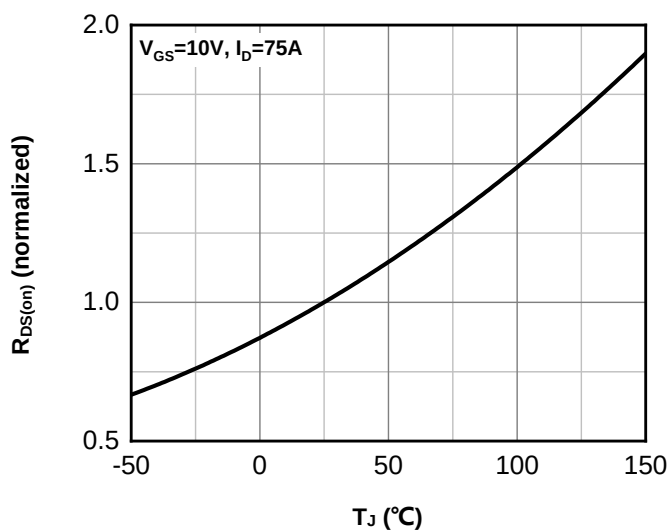
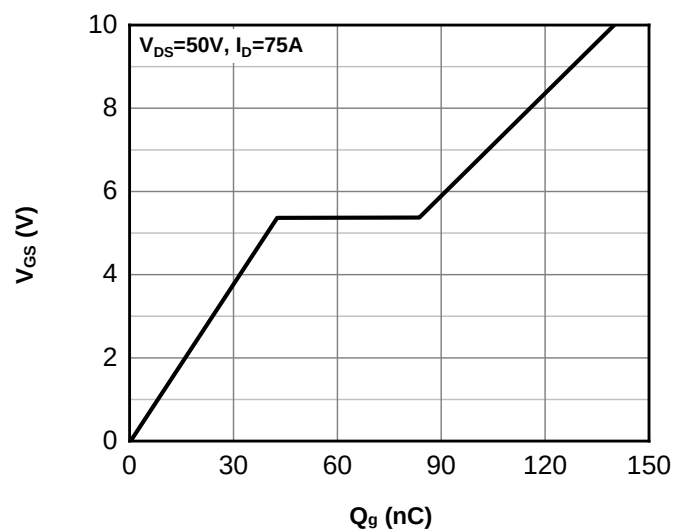
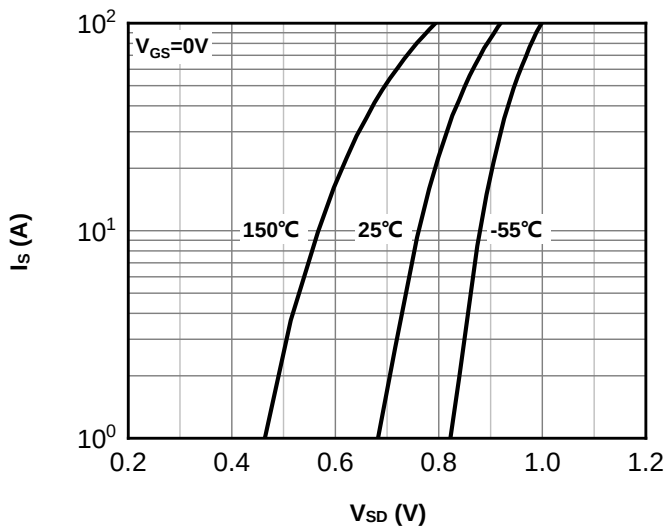
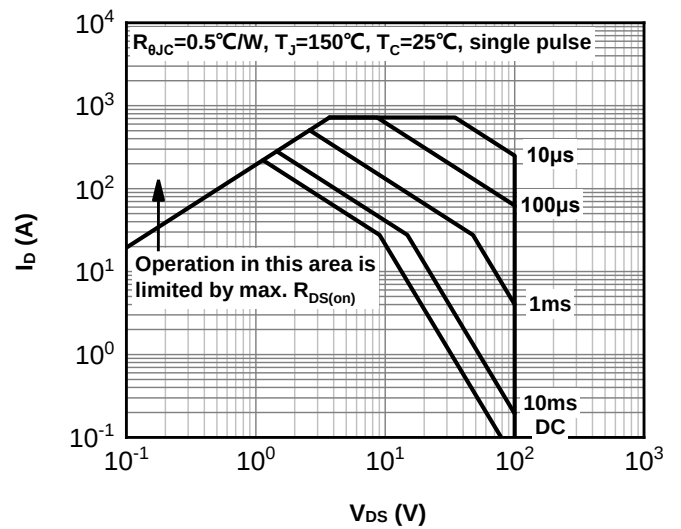
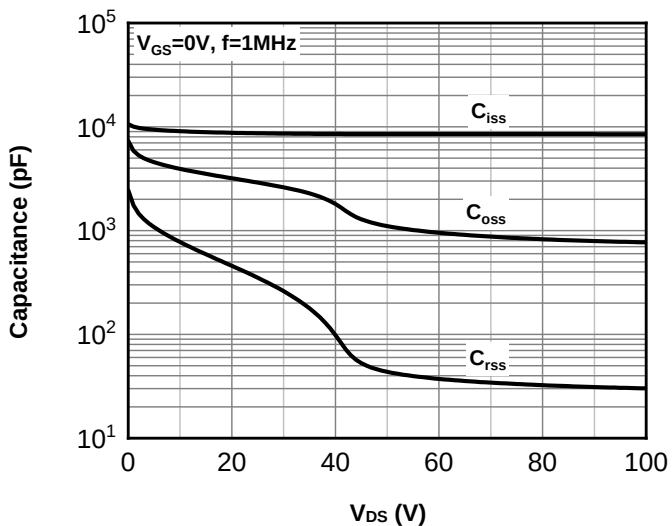
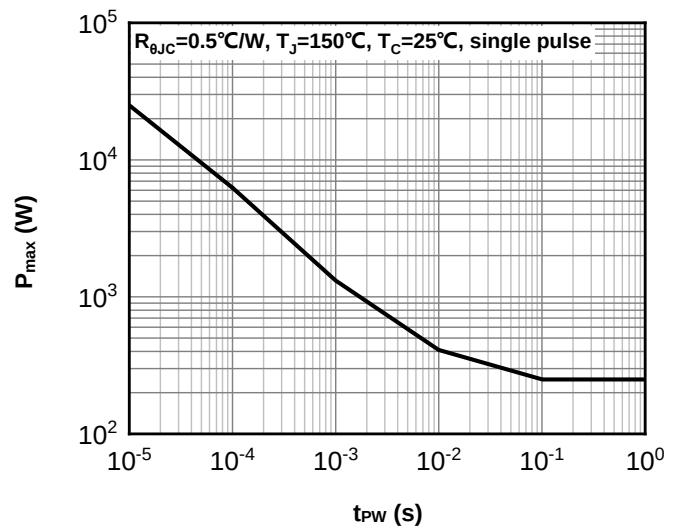
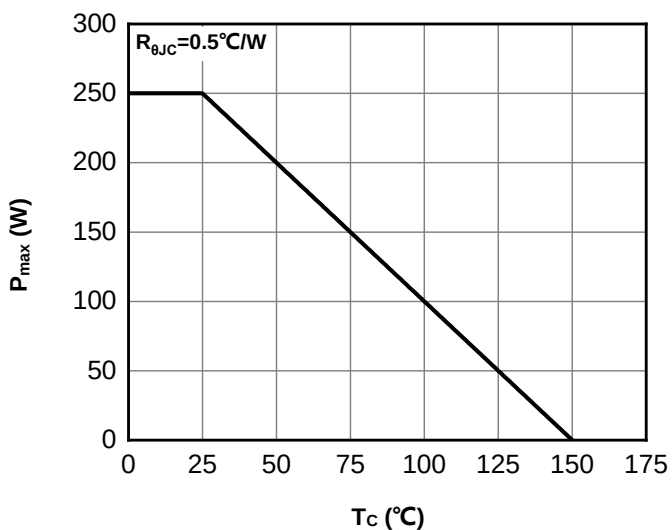
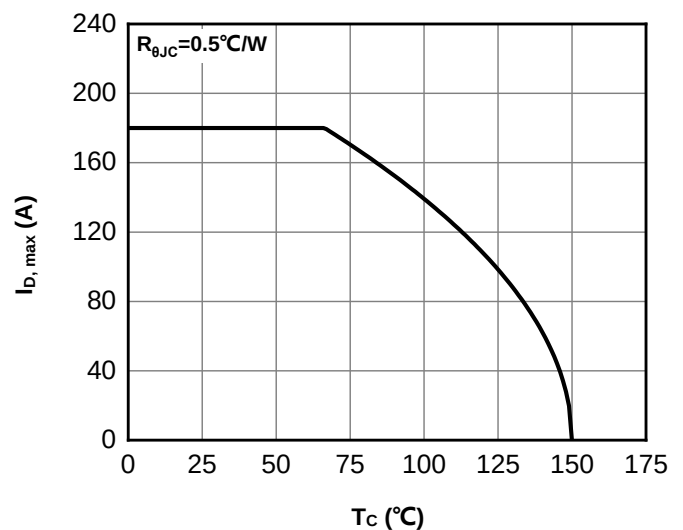
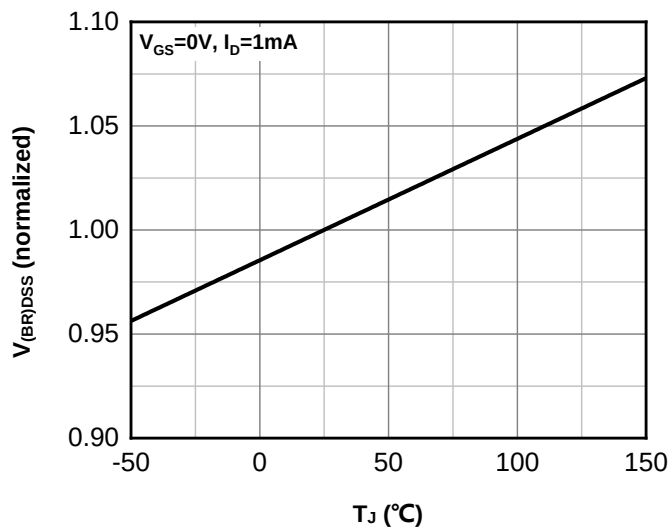
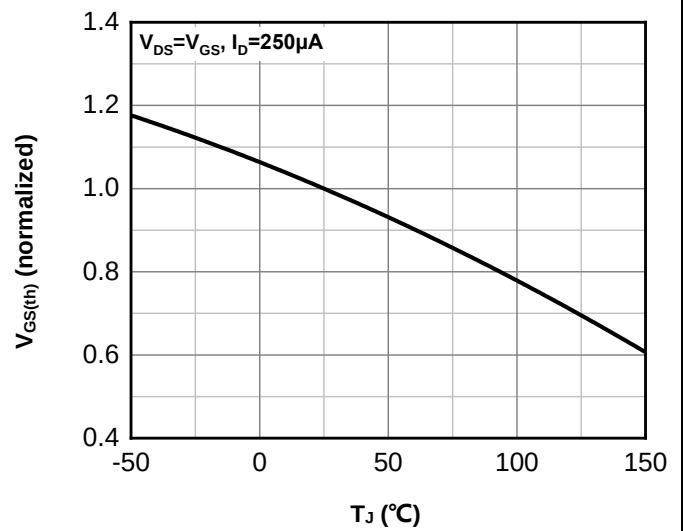
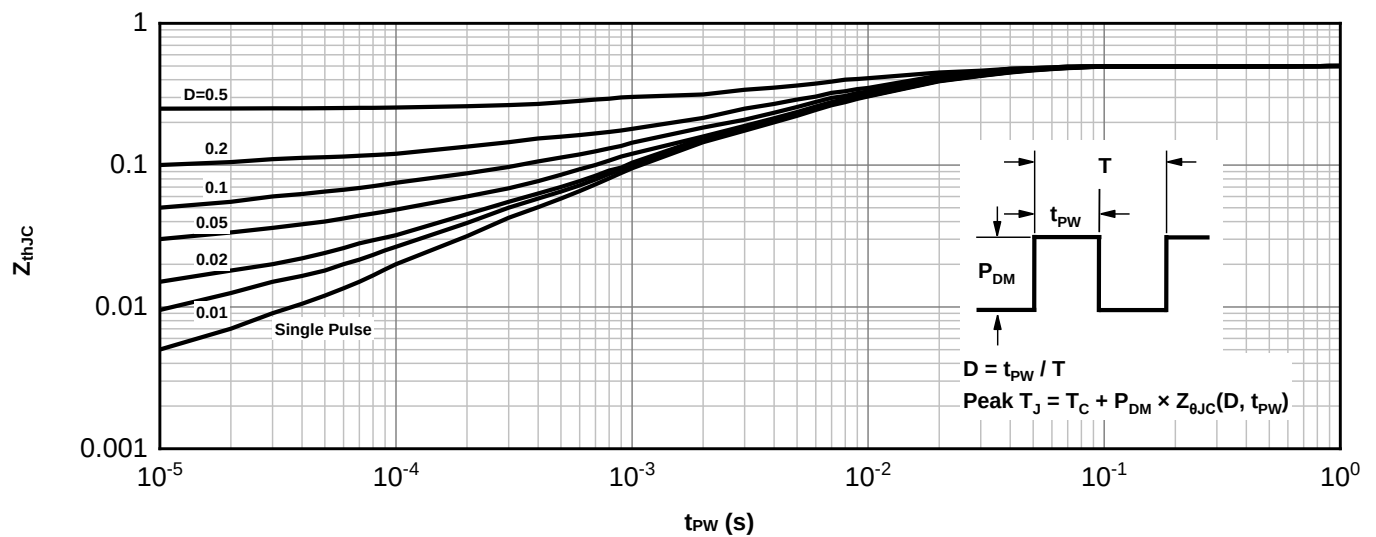


Fig.6 Typ. gate charge



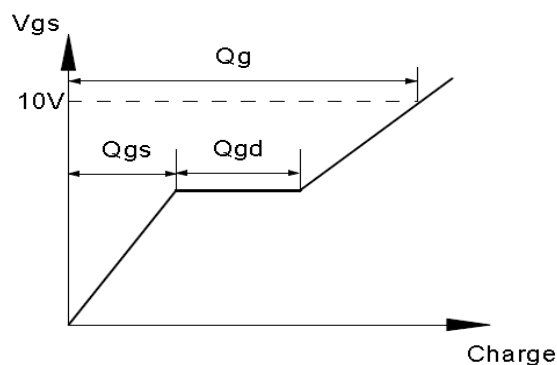
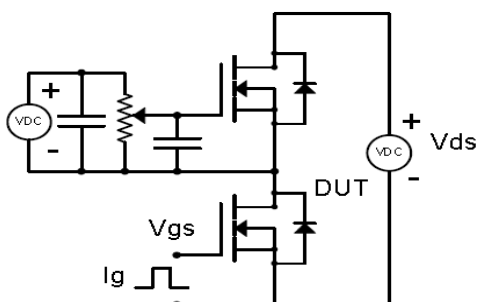
Typical Performance Characteristics

Fig.7 Typ. forward characteristics of body diode

Fig.8 Safe operating area

Fig.9 Typ. Capacitance

Fig.10 Single pulse maximum power dissipation

Fig.11 Max. power dissipation vs case temperature

Fig.12 Max. continuous drain current vs case temperature


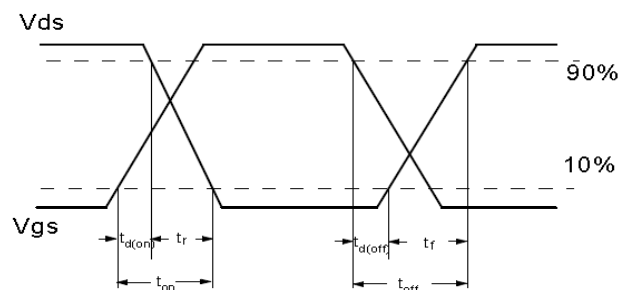
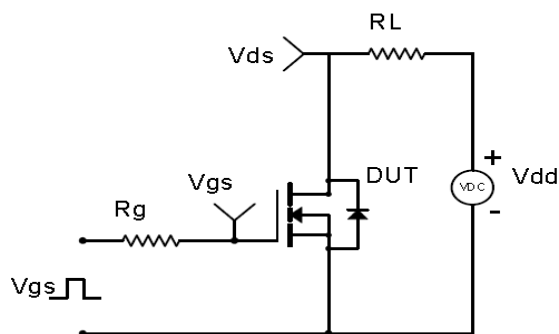
Typical Performance Characteristics
Fig.13 Normalized $V_{(BR)DSS}$ vs junction temperature

Fig.14 Normalized $V_{GS(th)}$ vs junction temperature

Fig.15 Transient thermal impedance from junction to case


Test Circuit & Waveform

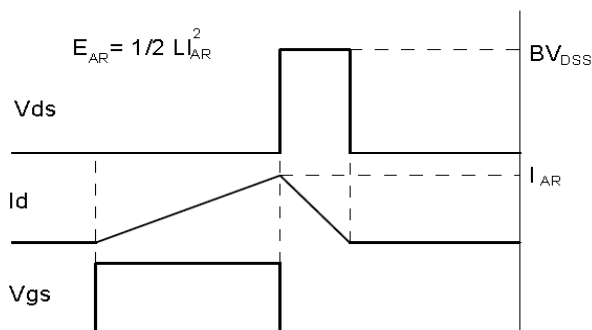
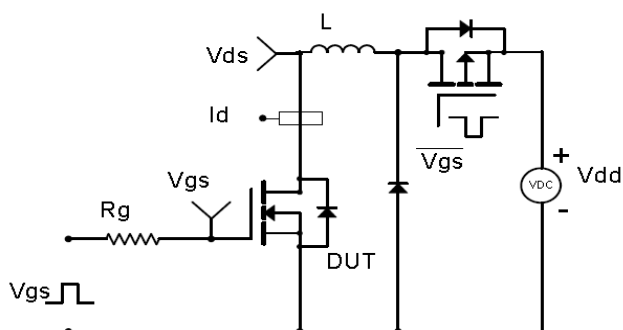
Gate Charge Test Circuit & Waveform



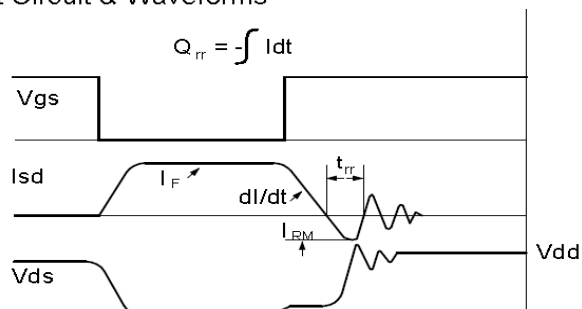
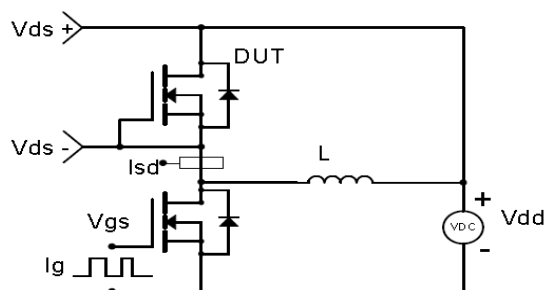
Resistive Switching Test Circuit & Waveforms

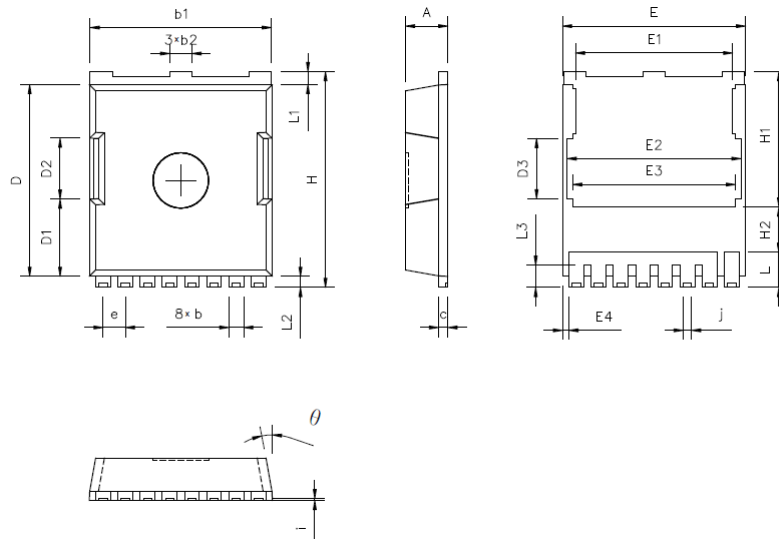


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package outline dimensions:TOLL


Dim	Millimeters		
	Min	Nom	Max
A	2.20	-	2.40
b	0.70	-	0.90
b1	9.70	-	9.90
b2	1.20 REF		
c	0.40	-	0.60
D	10.28	-	10.48
D1	4.08	-	4.28
D2	3.20	-	3.40
D3	3.16	-	3.36
E	9.80	-	10.00
E1	8.40	-	8.60
E2	9.30	-	9.50
E3	8.80 REF		
E4	0.25	-	0.45
e	1.20 BASIC		
H	11.58	-	11.78
H1	7.23	-	7.43
H2	2.45 REF		
i	0.10	-	-
j	0.45 REF		
L	1.60	-	2.10
L1	0.60	-	0.80
L2	0.50	-	0.70
L3	1.05	-	1.30
θ	10° REF		

Important Notice

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