

Product Summary

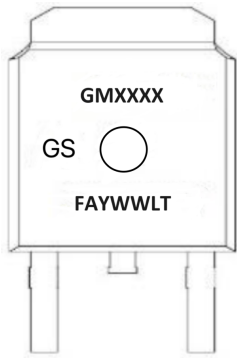
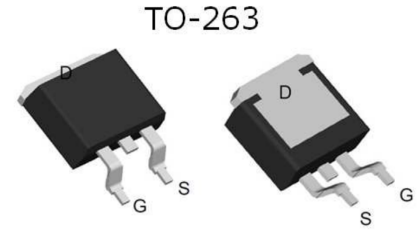
V_{DS} (V)	$R_{DS(on),max}$ (mΩ)	I_D (A)
100	2.0 @ $V_{GS} = 10V$	259 ⁽¹⁾

Features

- Low $R_{DS(on)}$ SGT technology
- Low thermal impedance
- Fast switching speed
- 100% avalanche tested

Application

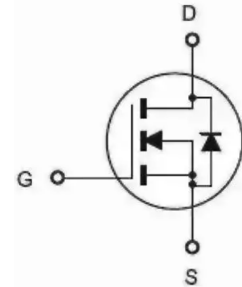
- DC/DC conversion
- Power switch
- Synchronous Rectification in SMPS



TO-263

NOTE:
 LOGO - GS
 GMXXXXX- 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 ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{DS}	100	V
Gate-source voltage	V_{GS}	± 20	V
Continuous drain current	I_D	$T_C=25^\circ\text{C}$ ⁽¹⁾	259
		$T_C=100^\circ\text{C}$	164
		$T_A=25^\circ\text{C}$ ⁽⁴⁾	28
Pulsed drain current ⁽²⁾	$I_{D,pulse}$	1036	A
Avalanche energy, single pulse ⁽³⁾	E_{AS}	1365	mJ
Power dissipation	P_D	$T_C=25^\circ\text{C}$	250
		$T_A=25^\circ\text{C}$ ⁽⁴⁾	3.1
Operating junction and storage temperature range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

Thermal Characteristic ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Max.	Unit
Thermal resistance, junction-to-case	$R_{\theta JC}$	0.5	$^\circ\text{C/W}$
Thermal resistance, junction-to-ambient ⁽⁴⁾	$R_{\theta JA}$	40	

**Electrical characteristics (Ta=25°C ± 3°C)**

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Static parameter						
Drain to source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 1 mA	100			V
Gate-source threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	2.2	3.0	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 = 100 A		1.9	2	mΩ
Forward transconductance ⁽⁵⁾	g _{fs}	V _{DS} = 5 V, I _D = 100 A		238		S
Gate resistance	R _g	f = 1 MHz		1.6		Ω
Dynamic ⁽⁵⁾						
Total gate charge	Q _g	V _{DS} = 50 V, I _D = 100 A, V _{GS} = 10 V		176		nC
Gate-source charge	Q _{gs}			47		
Gate-drain charge	Q _{gd}			54		
Turn-on delay time	t _{d(on)}	V _{DS} = 50 V, I _D = 100 A, V _{GS} = 10 V, R _{GEN} = 6 Ω		85		ns
Rise time	t _r			137		
Turn-off delay time	t _{d(off)}			92		
Fall time	t _f			98		
Input capacitance	C _{iss}	V _{DS} = 50 V, V _{GS} = 0 V, f = 1 MHz		10120		pF
Output capacitance	C _{oss}			1360		
Reverse transfer capacitance	C _{rss}			50		
Reverse Diode Characteristics ⁽⁵⁾						
Diode forward voltage	V _{SD}	V _{GS} = 0 V, I _F = 100 A		0.9	1.2	V
Reverse recovery time	t _{rr}	V _{DS} = 50 V, I _F = 50 A, di/dt = 100 A/μs		79		ns
Reverse recovery charge	Q _{rr}			180		nC

Notes

- (1) Limited by maximum junction temperature..
- (2) Pulse width limited by maximum junction temperature.
- (3) $V_{DS} = 50\text{ V}$, $V_{GS} = 10\text{ V}$, $L = 0.5\text{ mH}$.
- (4) $R_{\theta JA}$ 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.

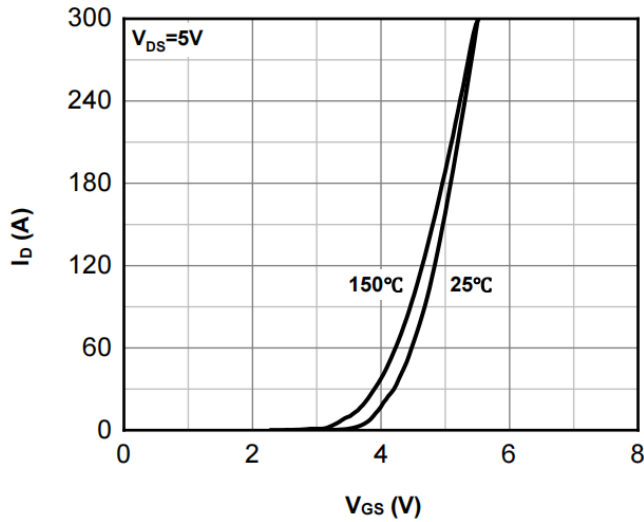
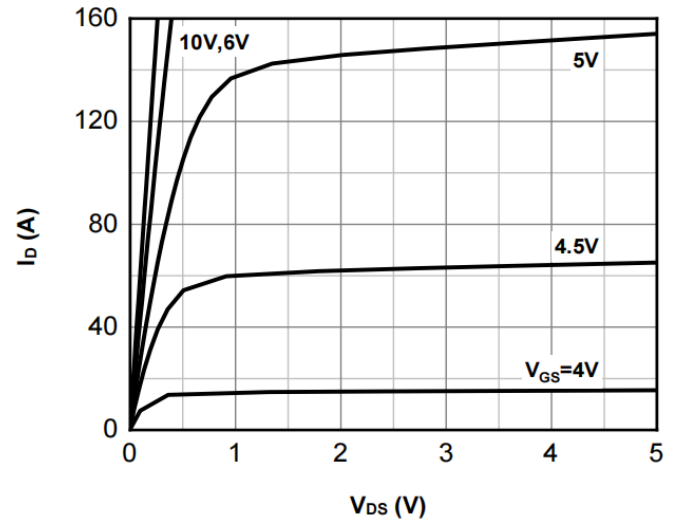
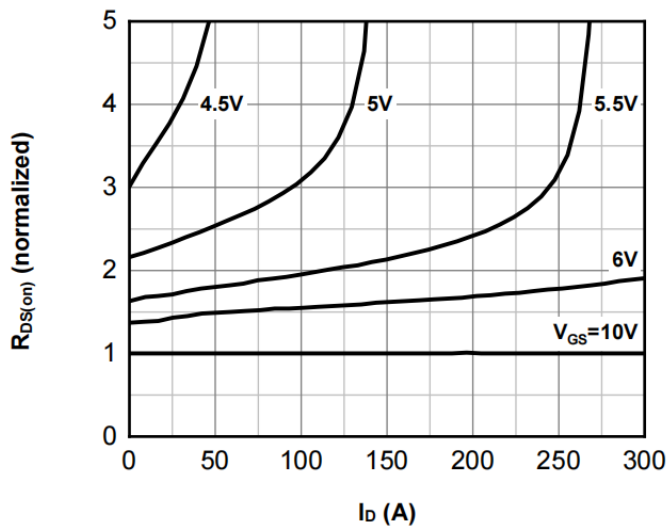
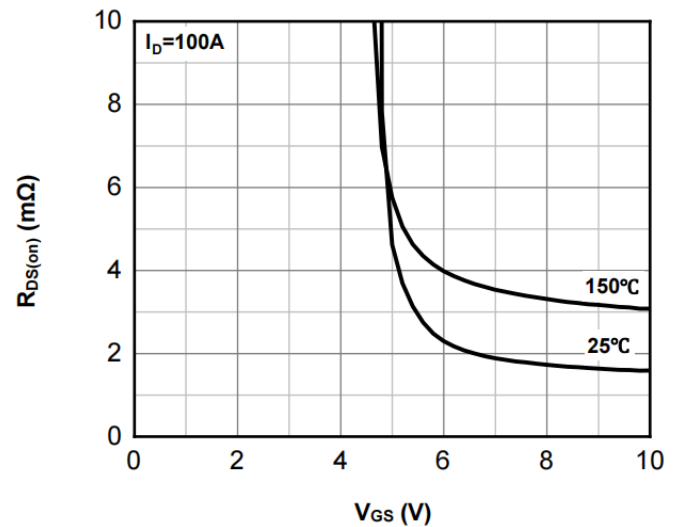
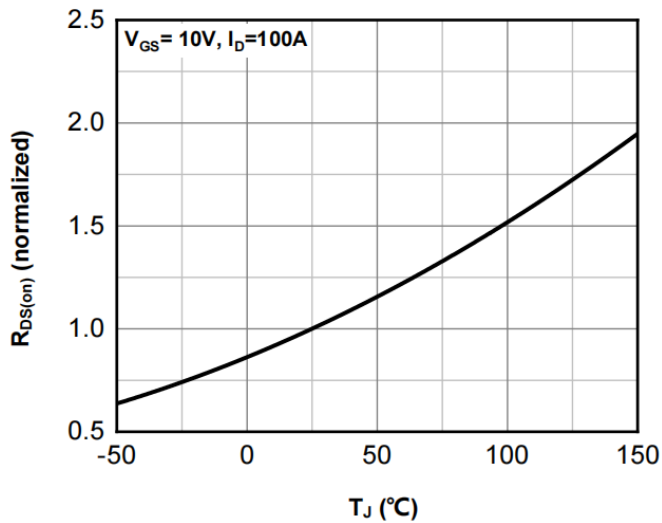
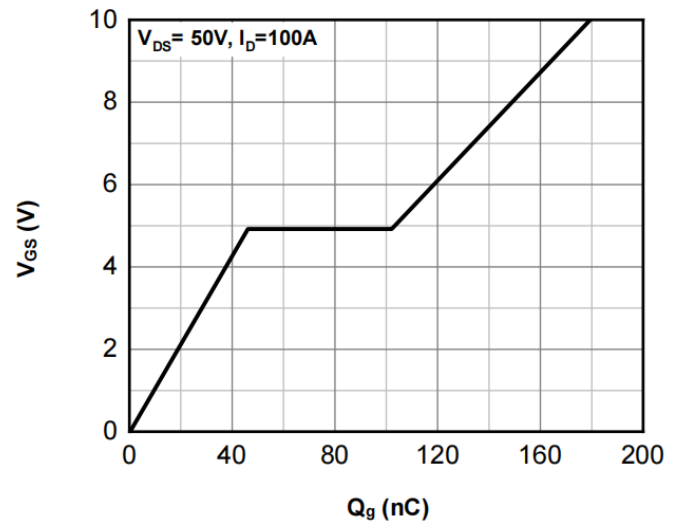
Electrical characteristics diagrams
Fig.1 Typ. transfer characteristics

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


Fig.7 Typ. forward characteristics of body diode

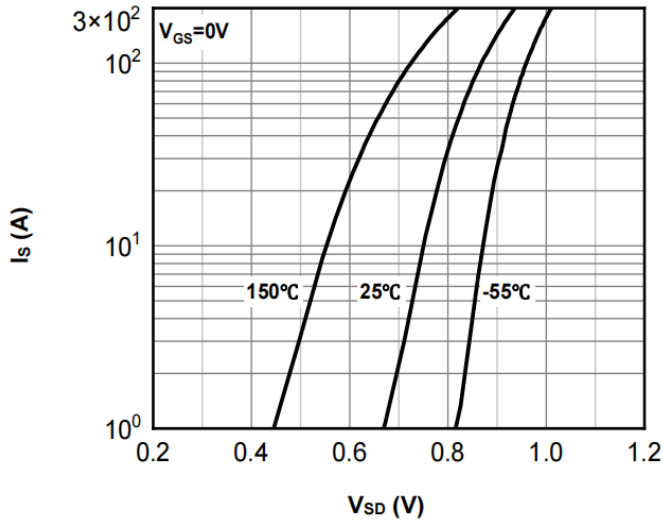


Fig.8 Safe operating area

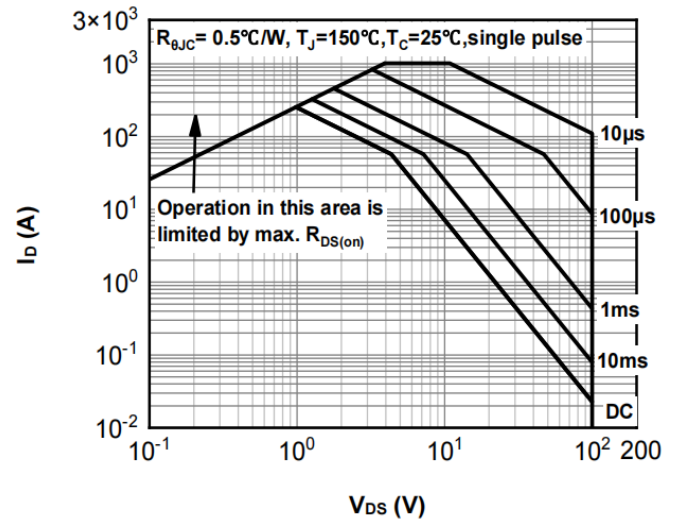


Fig.9 Typ. Capacitance

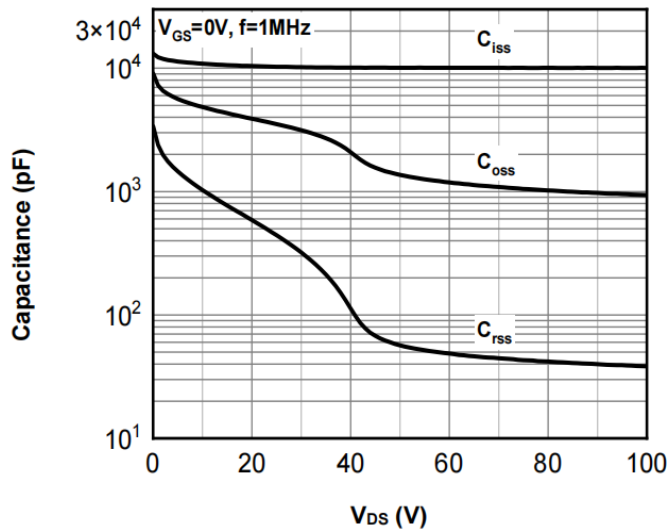


Fig.10 Single pulse maximum power dissipation

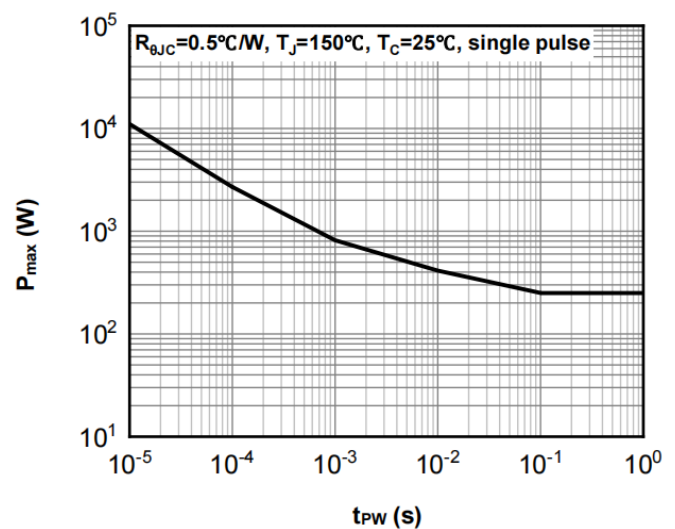


Fig.11 Max. power dissipation vs case temperature

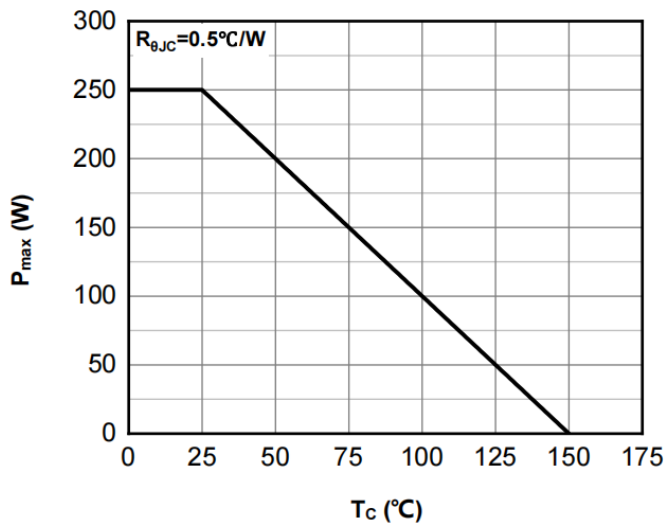


Fig.12 Max. continuous drain current vs case temperature

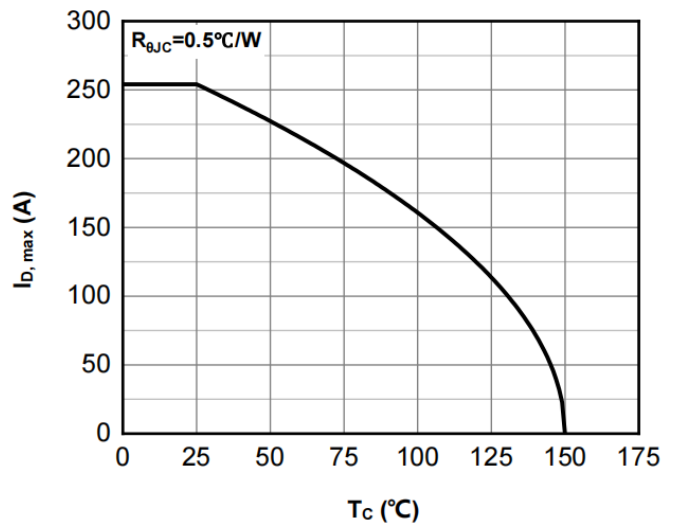
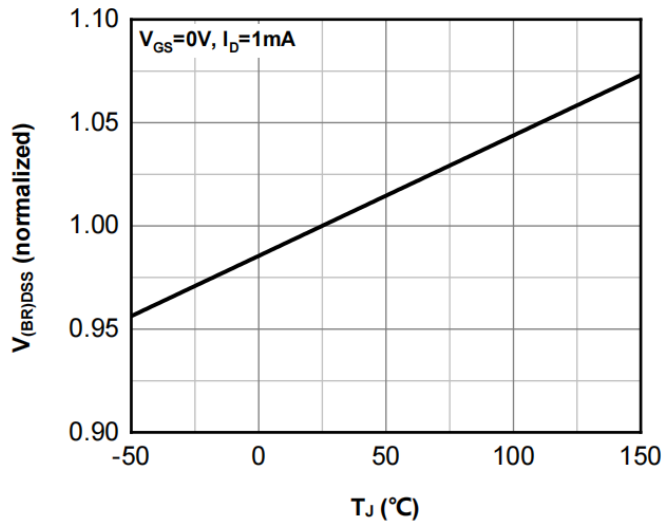
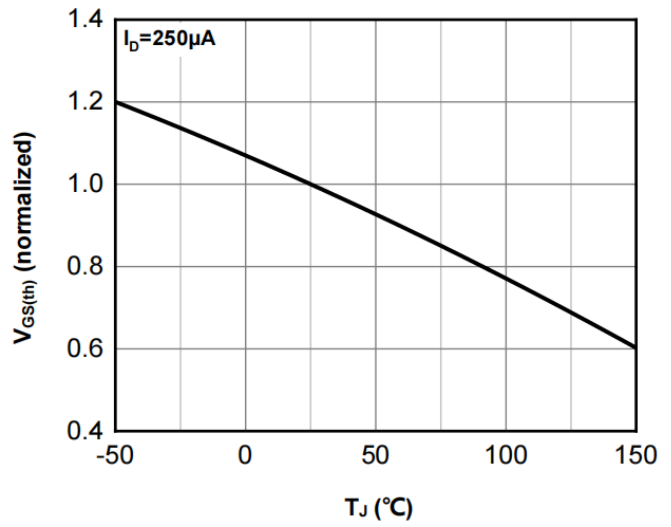
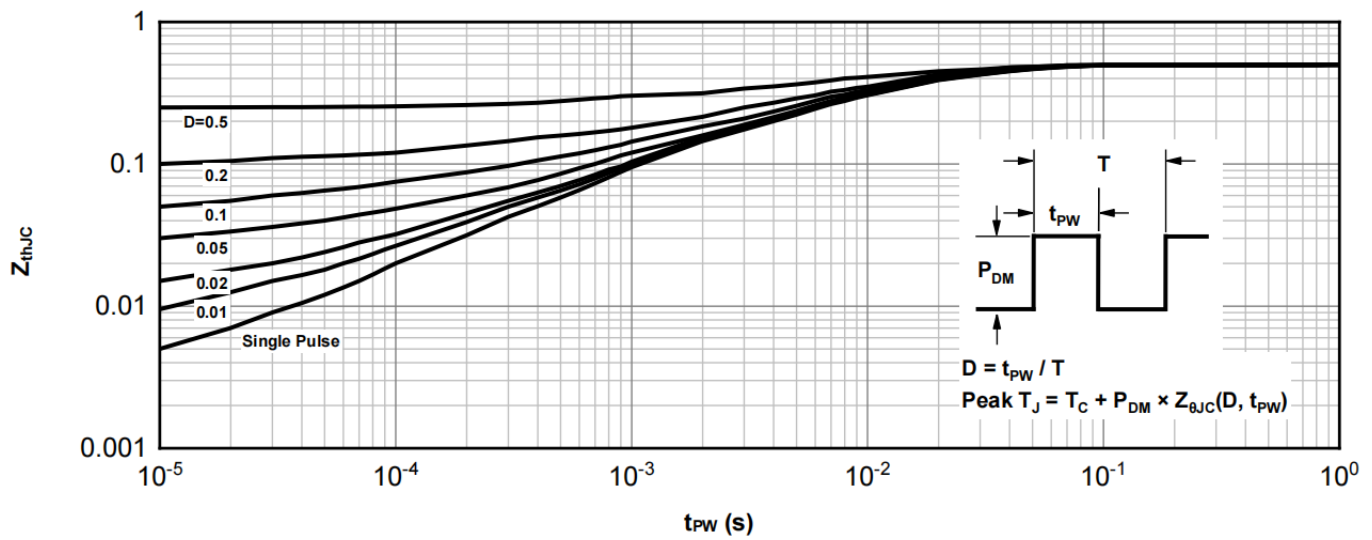
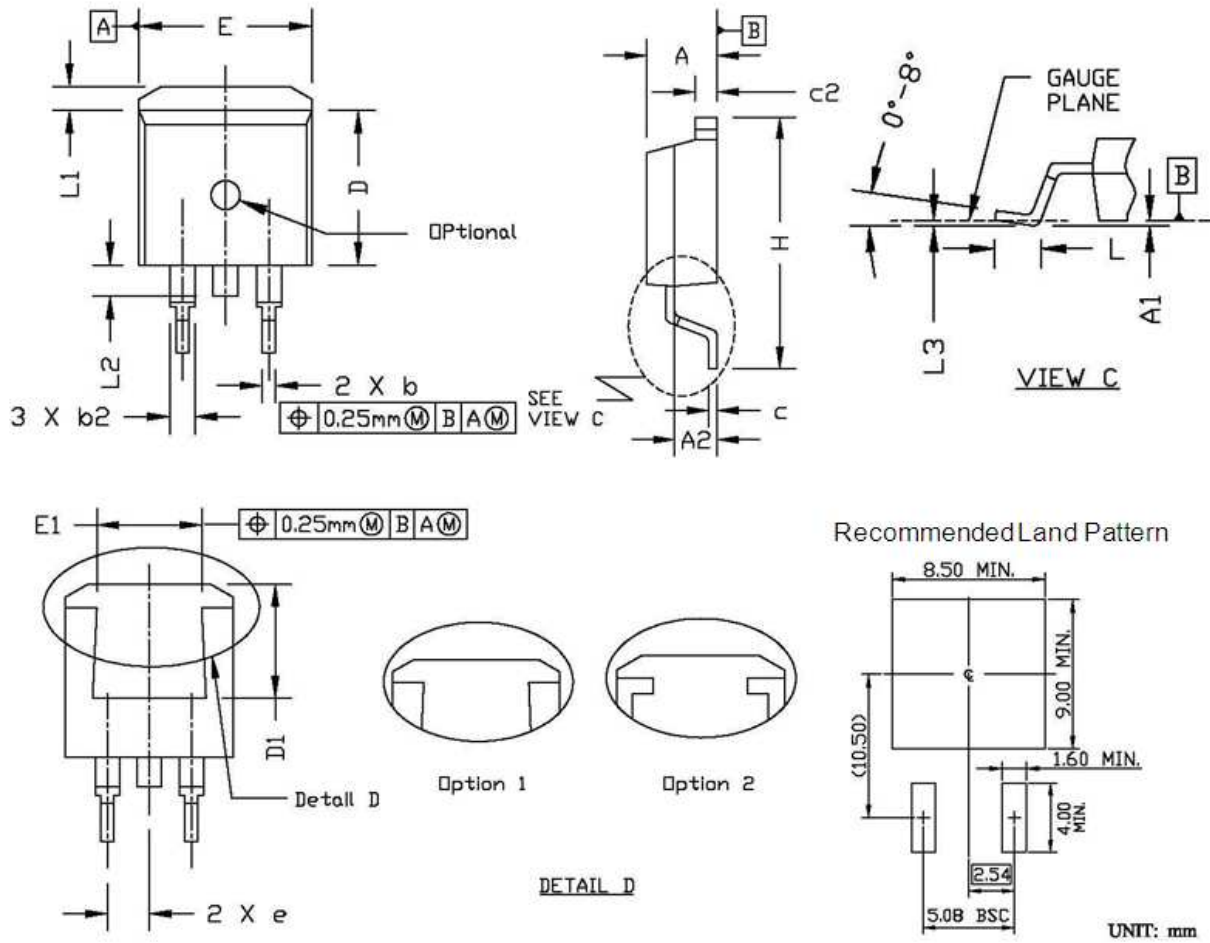


Fig.13 Normalized $V_{(BR)DSS}$ vs junction temperature

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

Fig.15 Transient thermal impedance from junction to case


Package outline dimensions:TO-263


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.30	4.86	0.169	0.191
A1	0.00	0.25	0.000	0.010
A2	2.34	2.79	0.092	0.110
b	0.68	0.94	0.027	0.037
b2	1.15	1.35	0.045	0.053
c	0.33	0.65	0.013	0.026
c2	1.17	1.40	0.046	0.055
D	8.38	9.45	0.330	0.372
D1	6.90	8.17	0.272	0.322
e	2.54 BSC.		0.100 BSC.	
E	9.78	10.50	0.385	0.413
E1	6.50	8.60	0.256	0.339
H	14.61	15.88	0.575	0.625
L	2.24	3.00	0.088	0.118
L1	0.70	1.60	0.028	0.063
L2	1.00	1.78	0.039	0.070
L3	0.00	0.25	0.000	0.010

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