

- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology
- ★ 100% EAS Guaranteed

Product Summary



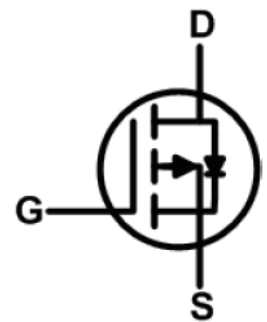
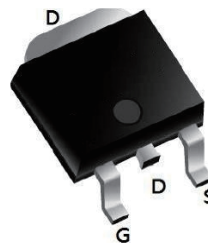
BVDSS	RDS(on)	ID
-100V	180mΩ	-10A

Description

The 10P10 is the high cell density trenched N-ch MOSFETs, which provide excellent RDS(on) and gate charge for most of the synchronous buck converter applications.

The 10P10 meet the RoHS and Green Product, requirement 100% EAS guaranteed with full function reliability approved.

TO252 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
$V_{DS}$	Drain-Source Voltage	-100	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D@T_C=25^\circ C$	Continuous Drain Current, $V_{GS} @ -10V^1$	-10	A
$I_D@T_C=100^\circ C$	Continuous Drain Current, $V_{GS} @ -10V^1$	-4	A
$I_D@T_A=25^\circ C$	Continuous Drain Current, $V_{GS} @ -10V^1$	-2.5	A
$I_D@T_A=70^\circ C$	Continuous Drain Current, $V_{GS} @ -10V^1$	-2	A
$I_{DM}$	Pulsed Drain Current <sup>2</sup>	-20	A
EAS	Single Pulse Avalanche Energy <sup>3</sup>	48.1	mJ
$I_{AS}$	Avalanche Current	-14	A
$P_D@T_C=25^\circ C$	Total Power Dissipation <sup>4</sup>	10	W
$P_D@T_A=25^\circ C$	Total Power Dissipation <sup>4</sup>	2	W
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ C$
$T_J$	Operating Junction Temperature Range	-55 to 150	$^\circ C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JA}$	Thermal Resistance Junction-Ambient <sup>1</sup>	---	72	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case <sup>1</sup>	---	8	$^\circ C/W$

**Electrical Characteristics ( $T_J = 25^\circ\text{C}$  unless otherwise specified)**

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Units
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-100	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance <sup>2</sup>	$V_{GS}=-10V, I_D=-3A$	---	180	220	m $\Omega$
		$V_{GS}=-4.5V, I_D=-2A$	---	210	255	m $\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.2	---	-2.5	V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=-80V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	-1	$\mu A$
		$V_{DS}=-80V, V_{GS}=0V, T_J=85^\circ\text{C}$	---	---	-30	$\mu A$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA
$R_g$	Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	---	13	---	$\Omega$
$Q_g$	Total Gate Charge (-10V)	$V_{DS}=-50V, V_{GS}=-10V, I_D=-2A$	---	19	---	nC
$Q_{gs}$	Gate-Source Charge		---	3.4	---	nC
$Q_{gd}$	Gate-Drain Charge		---	2.9	---	nC
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=-30V, V_{GS}=-10V, R_G=3.3\Omega, I_D=-1A$	---	9	---	ns
$T_r$	Rise Time		---	6	---	
$T_{d(off)}$	Turn-Off Delay Time		---	39	---	
$T_f$	Fall Time		---	33	---	
$C_{iss}$	Input Capacitance	$V_{DS}=-30V, V_{GS}=0V, f=1\text{MHz}$	---	1228	---	pF
$C_{oss}$	Output Capacitance		---	41	---	pF
$C_{rss}$	Reverse Transfer Capacitance		---	29	---	pF

**Diode Characteristics**

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Units
$I_S$	Continuous Source Current <sup>1,5</sup>	$V_G=V_D=0V, \text{Force Current}$	---	---	-10	A
$V_{SD}$	Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_S=-1A, T_J=25^\circ\text{C}$	---	---	-1.2	V

**Note :**

1. The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 20Z copper.
2. The data tested by pulsed , pulse width  $\leq 300\mu s$  , duty cycle  $\leq 2\%$
3. The EAS data shows Max. rating. The test condition is  $V_{DD}=-25V, V_{GS}=-10V, L=0.1\text{mH}, I_{AS}=-14A$
4. The power dissipation is limited by  $150^\circ\text{C}$  junction temperature
5. The data is theoretically the same as  $I_D$  and  $I_{DM}$ , in real applications, should be limited by total power dissipation.

P-Channel Typical Characteristics

Figure 1: Output Characteristics

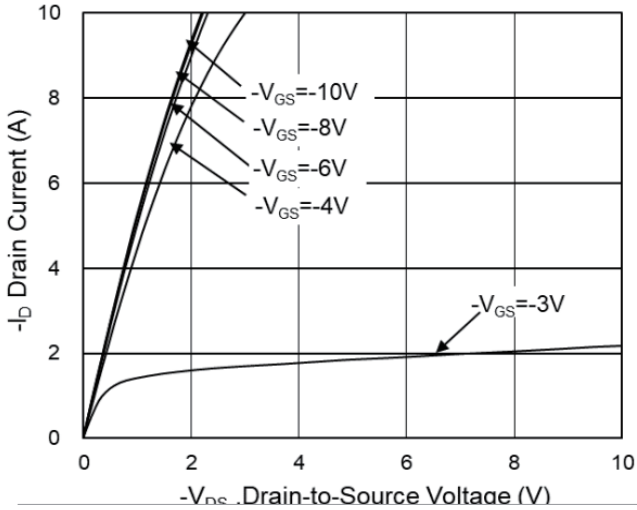


Figure 2: On-Resistance vs. G-S Voltage

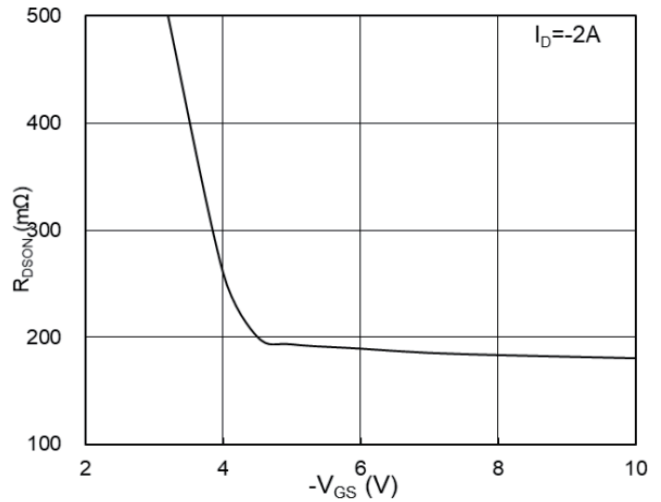


Figure 3: Forward Characteristics Of Reverse

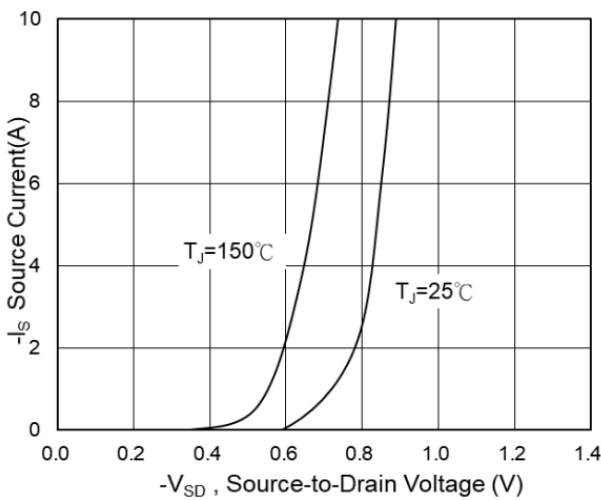


Figure 4: Gate-Charge Characteristics

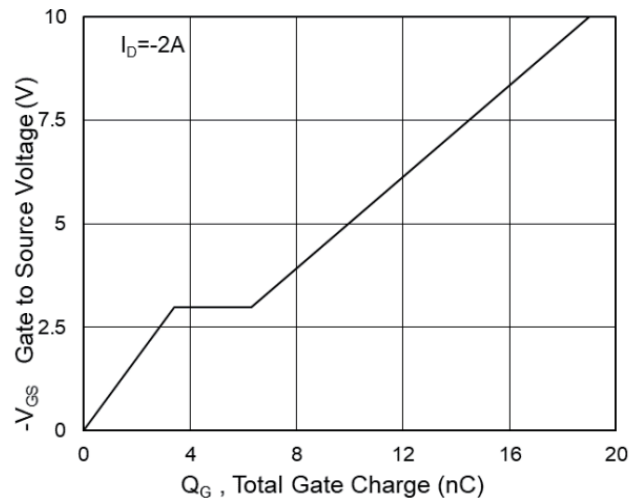


Figure 5: Normalized VGS(th) vs. TJ

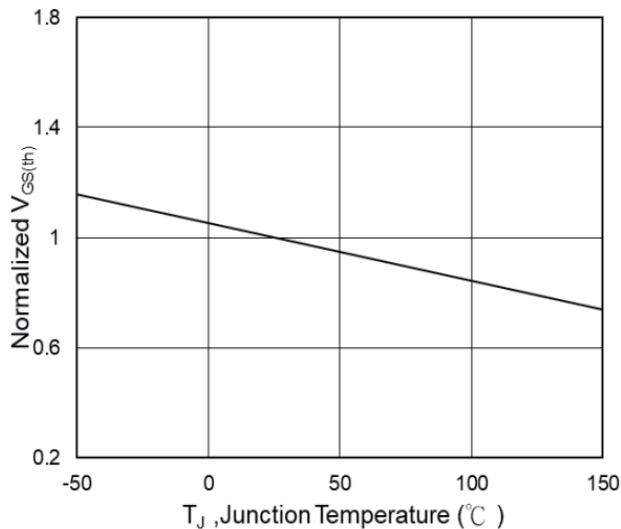
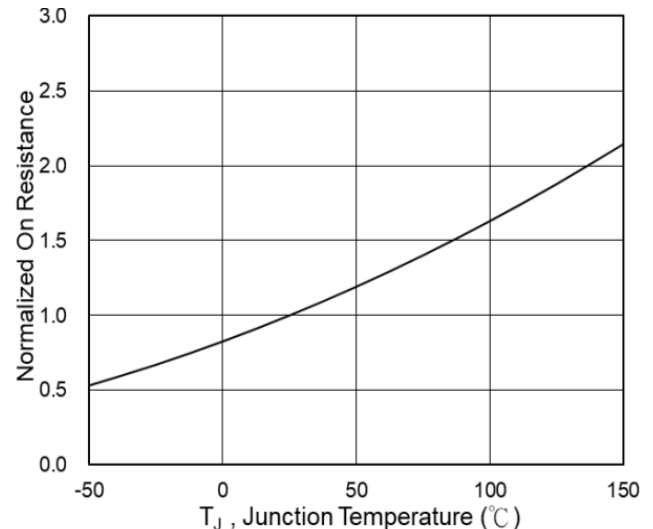


Figure 6: Normalized RDS(on) vs. TJ



Typical Performance Characteristics

Figure 7: Capacitance

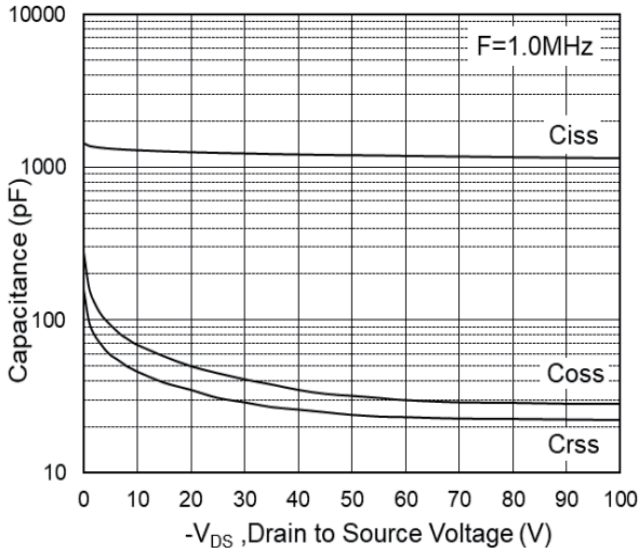


Figure 8: Safe Operating Area

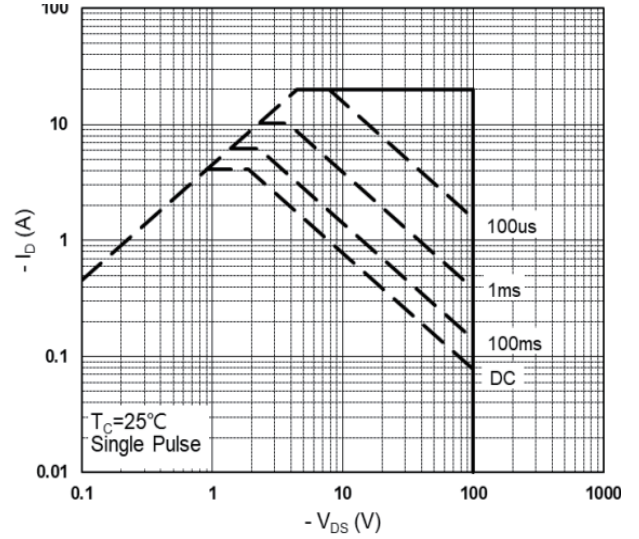


Figure 9: Normalized Maximum Transient Thermal Response

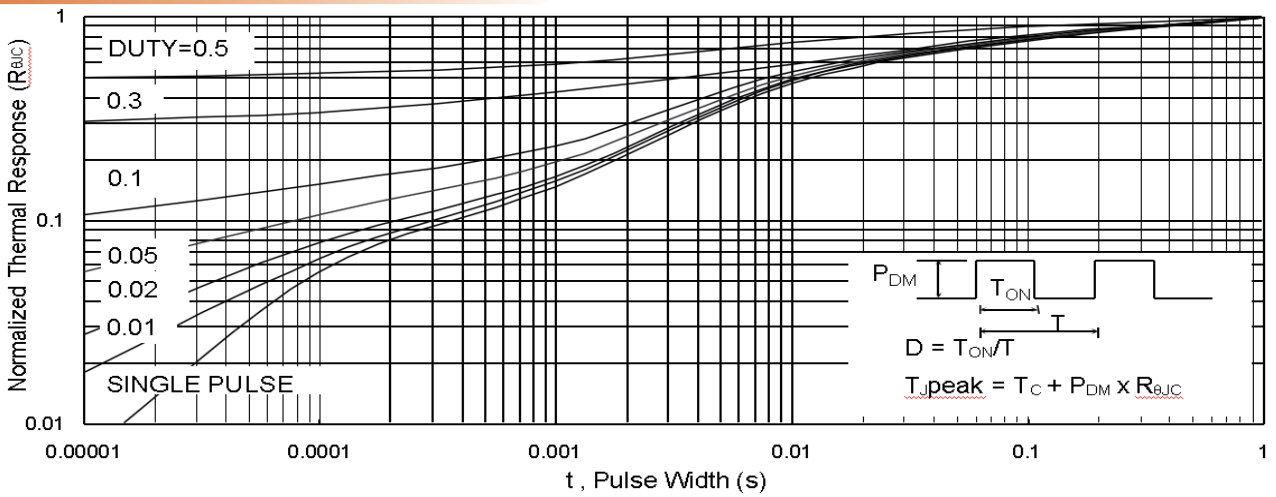


Figure 10: Switching Time Waveform

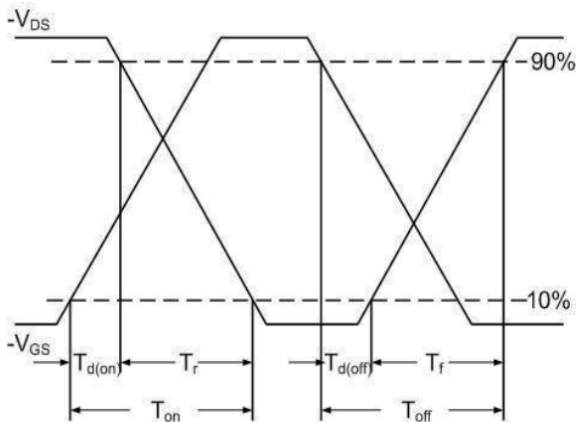
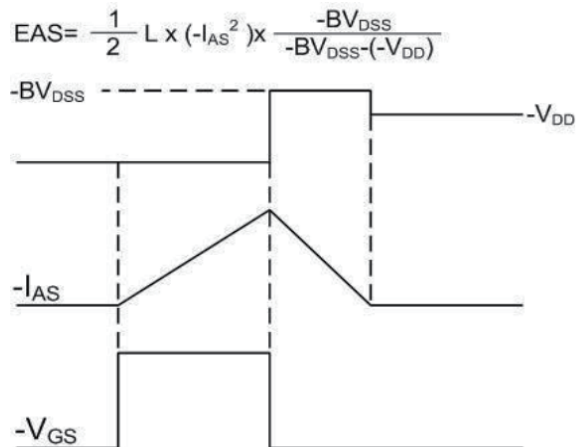
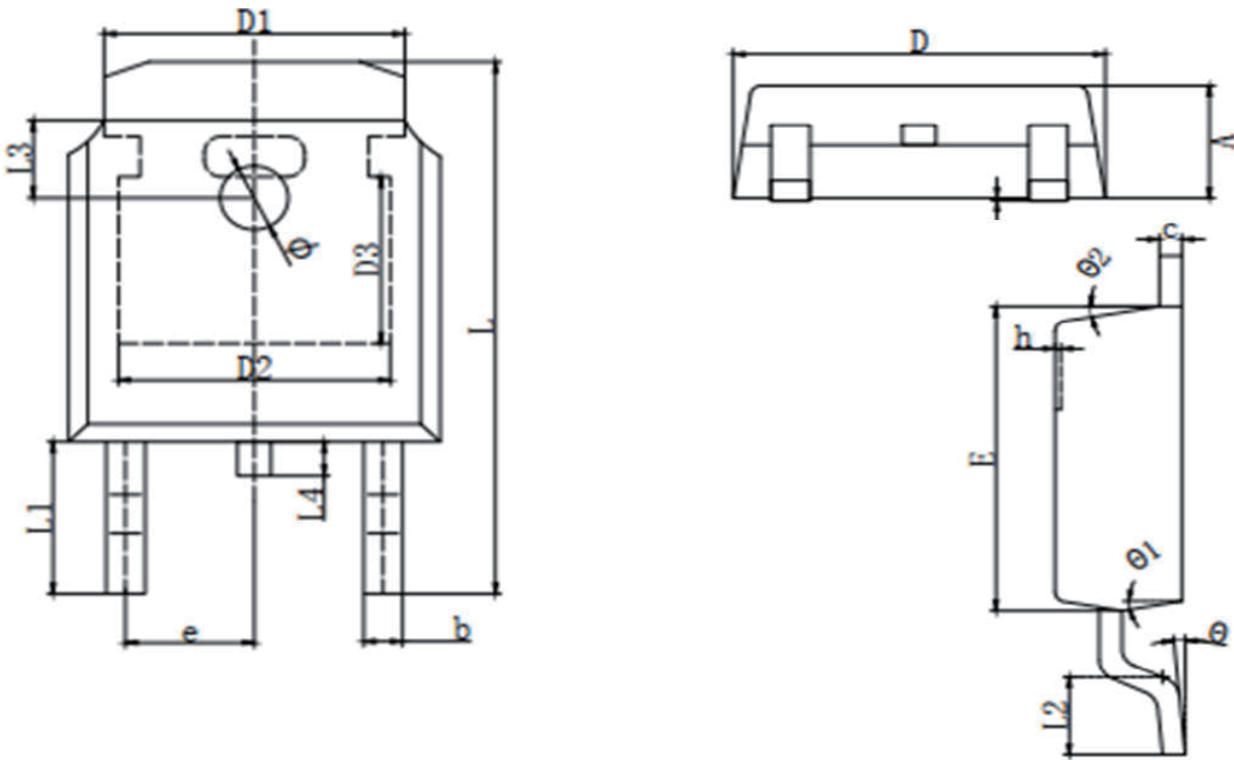


Figure 11: Unclamped Inductive Switching



TO-252 Package outline



Symbol	MILLMETER		Symbol	MILLMETER	
	MIN	MAX		MIN	MAX
A	2.200	2.400	h	0.000	0.200
A1	0.000	0.127	L	9.900	10.30
b	0.640	0.740	L1	2.888REF	
c	0.460	0.580	L2	1.400	1.700
D	6.500	6.700	L3	1.600REF	
D1	5.334REF		L4	0.600	1.000
D2	4.826REF		∅	1.100	1.300
D3	3.166REF		θ	0°	8°
E	6.00	6.200	θ <sub>1</sub>	9° TYP2	
e	2.286TYP		θ <sub>2</sub>	9° TYP	

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [MOSFET](#) category:*

*Click to view products by [HL](#) manufacturer:*

Other Similar products are found below :

[IRFD120](#) [JANTX2N5237](#) [BUK455-60A/B](#) [MIC4420CM-TR](#) [VN1206L](#) [NDP4060](#) [SI4482DY](#) [IPS70R2K0CEAKMA1](#) [SQD23N06-31L-GE3](#)  
[TK16J60W,S1VQ\(O](#) [2SK2614\(TE16L1,Q\)](#) [DMN1017UCP3-7](#) [DMN1053UCP4-7](#) [SQJ469EP-T1-GE3](#) [NTE2384](#) [DMC2700UDMQ-7](#)  
[DMN2080UCB4-7](#) [DMN61D9UWQ-13](#) [US6M2GTR](#) [DMN31D5UDJ-7](#) [DMP22D4UFO-7B](#) [DMN1006UCA6-7](#) [DMN16M9UCA6-7](#)  
[STF5N65M6](#) [IRF40H233XTMA1](#) [STU5N65M6](#) [DMN6022SSD-13](#) [DMN13M9UCA6-7](#) [DMTH10H4M6SPS-13](#) [DMN2990UFB-7B](#)  
[IPB80P04P405ATMA2](#) [2N7002W-G](#) [MCAC30N06Y-TP](#) [MCQ7328-TP](#) [BXP7N65D](#) [BXP4N65F](#) [AOL1454G](#) [WMJ80N60C4](#) [BXP2N20L](#)  
[BXP2N65D](#) [BXT1150N10J](#) [BXT1700P06M](#) [TSM60NB380CP](#) [ROG](#) [RQ7L055BGTCR](#) [DMNH15H110SK3-13](#) [SLF10N65ABV2](#)  
[BSO203SP](#) [BSO211P](#) [IPA60R230P6](#) [IPA60R460CE](#)