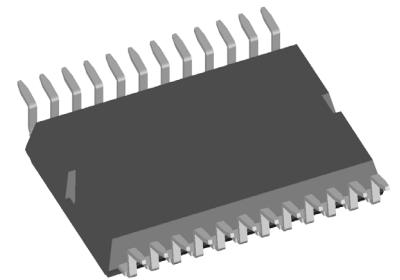


# Three phase full Bridge

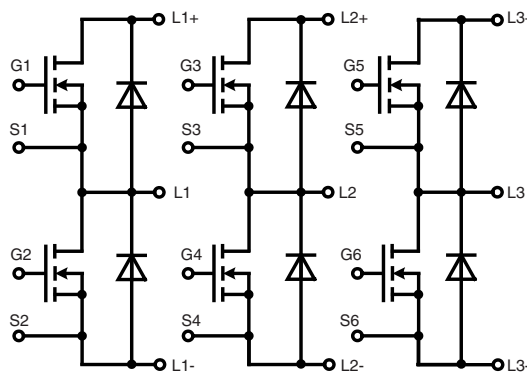
with Trench MOSFETs  
in DCB-isolated high-current package

$V_{DSS} = 100\text{ V}$   
 $I_{D25} = 190\text{ A}$   
 $R_{DSon\ typ.} = 1.7\text{ m}\Omega$

**Part number**  
**MTI145WX100GD**



Surface Mount Device



### Features / Advantages:

- MOSFETs in trench technology:
  - low  $R_{DSon}$
  - optimized intrinsic reverse diode
- Package:
  - high level of integration
  - high current capability
  - aux. terminals for MOSFET control
  - terminals for soldering or welding connections
  - isolated DCB ceramic base plate with optimized heat transfer
- Space and weight savings

### Applications:

- AC drives
- in automobiles
    - electric power steering
    - starter generator
  - in industrial vehicles
    - propulsion drives
    - fork lift drives
  - in battery supplied equipment

### Package: ISOPLUS-DIL®

- High level of integration
- RoHS compliant
- High current capability
- Aux. Terminals for MOSFET control
- Terminals for soldering or welding connections
- Space and weight savings

### Terms & Conditions of usage

The data contained in this product data sheet is exclusively intended for technically trained staff. The user will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to his application. The specifications of our components may not be considered as an assurance of component characteristics. The information in the valid application- and assembly notes must be considered. Should you require product information in excess of the data given in this product data sheet or which concerns the specific application of your product, please contact your local sales office.

Due to technical requirements our product may contain dangerous substances. For information on the types in question please contact your local sales office.

Should you intend to use the product in aviation, in health or life endangering or life support applications, please notify. For any such application we urgently recommend

- to perform joint risk and quality assessments;

- the conclusion of quality agreements;

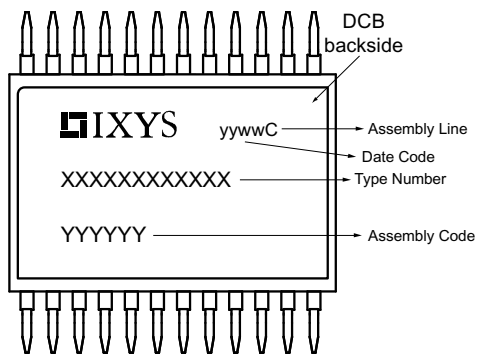
- to establish joint measures of an ongoing product survey, and that we may make delivery dependent on the realization of any such measures.

IXYS reserves the right to change limits, test conditions and dimensions.

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MOSFETs				Ratings			
Symbol	Definitions	Conditions	min.	typ.	max.	Unit	
$V_{DSS}$	drain source breakdown voltage	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$			100	V	
$V_{GS}$	gate source voltage				$\pm 15$	V	
$V_{GSM}$	max. transient gate source voltage				$\pm 20$	V	
$I_{D25}$	continuous drain current	$T_C = 25^{\circ}\text{C}$			190	A	
$I_{D90}$		$T_C = 90^{\circ}\text{C}$			145	A	
$R_{DS(on)}^{1)}$	static drain source on resistance	on chip level at $I_D = 100\text{ A}; V_{GS} = 10\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	1.7 2.9	2.2	m $\Omega$ m $\Omega$	
$V_{GS(th)}$	gate threshold voltage	$I_D = 275\ \mu\text{A}; V_{DS} = V_{GS}$	$T_{VJ} = 25^{\circ}\text{C}$	2.0	2.7	3.5	V
$I_{DSS}$	drain source leakage current	$V_{DS} = V_{DSS}; V_{GS} = 0\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		1 100	$\mu\text{A}$ $\mu\text{A}$	
$I_{GSS}$	gate source leakage current	$V_{GS} = \pm 20\text{ V}; V_{DS} = 0\text{ V}$			500	nA	
$R_G$	gate resistance	on chip level		1.9		$\Omega$	
$C_{iss}$	input capacitance	} $V_{GS} = 0\text{ V}; V_{DS} = 50\text{ V}; f = 1\text{ Mhz}$		11.1		nF	
$C_{oss}$	output capacitance			1.94		nF	
$C_{rss}$	reverse transfer capacitance			70		pF	
$Q_g$	total gate charge	} $V_{GS} = 10\text{ V}; V_{DS} = 50\text{ V}; I_D = 100\text{ A}$		155		nC	
$Q_{gs}$	gate source charge			48		nC	
$Q_{gd}$	gate drain (Miller) charge			27		nC	
$t_{d(on)}$	turn-on delay time	} inductive load $V_{GS} = 10\text{ V}; V_{DS} = 50\text{ V}$ $I_D = 100\text{ A}; R_G = 27\ \Omega$	$T_{VJ} = 125^{\circ}\text{C}$		135	ns	
$t_r$	current rise time				75	ns	
$t_{d(off)}$	turn-off delay time				600	ns	
$t_f$	current fall time				40	ns	
$E_{on}$	turn-on energy per pulse				200	$\mu\text{J}$	
$E_{off}$	turn-off energy per pulse				600	$\mu\text{J}$	
$E_{rec(off)}$	turn-off reverse recovery losses		36	$\mu\text{J}$			
$R_{thJC}$	thermal resistance junction to case				0.85	K/W	
$R_{thJH}$	thermal resistance junction to heatsink	with heat transfer paste (IXYS test setup)		1.1	1.4	K/W	
$^1) V_{DS} = I_D \cdot (R_{DS(on)} + 2 \cdot R_{Pin\ to\ Chip})$							
Source-Drain Diode							
$I_{F25}$	forward current		$T_C = 25^{\circ}\text{C}$		180	A	
$I_{F90}$			$T_C = 90^{\circ}\text{C}$		105	A	
$V_{SD}$	source drain voltage	$I_F = 100\text{ A}; V_{GS} = 0\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$	0.9	1.2	V	
$Q_{RM}$	reverse recovery charge	} $V_R = 50\text{ V}; I_F = 100\text{ A}$ $R_G = 27\ \Omega$ ( $di/dt = 1700\text{ A}/\mu\text{s}$ )	$T_{VJ} = 125^{\circ}\text{C}$		2	$\mu\text{C}$	
$I_{RM}$	max. reverse recovery current				54	A	
$t_{rr}$	reverse recovery time				60	ns	

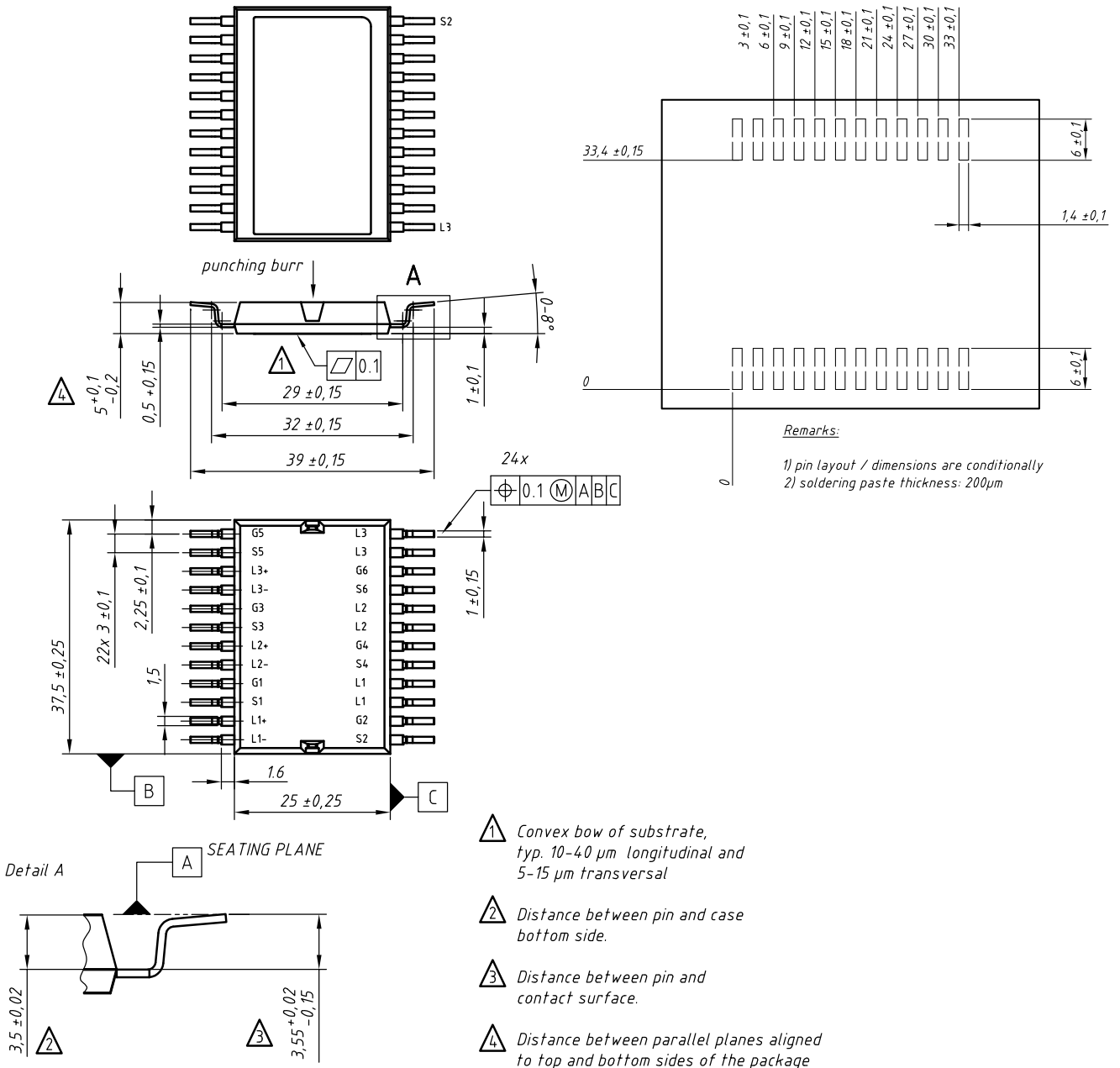
Package ISOPLUS-DIL®			Ratings			
Symbol	Definitions	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per pin in main current paths (L1+...L3+, L1-...L3-, L1...L3) may be additionally limited by external connections (PCB tracks) 2 pins for output L1, L2, L3			75	A
$T_{stg}$	storage temperature		-55		125	°C
$T_{op}$	operation temperature		-55		150	°C
$T_{VJ}$	virtual junction temperature		-55		175	°C
<b>Weight</b>				13		g
$F_C$	mounting force with clip		50		250	N
$V_{ISOL}$	isolation voltage	$t = 1$ second	50/60 Hz, RMS, $I_{ISOL} \leq 1$ mA	1200		V
		$t = 1$ minute		1000		V
$R_{pin-chip}$	resistance terminal to chip	$V_{DS} = I_D \cdot (R_{DS(on)} + 2 \cdot R_{pin\ to\ chip})$		0.5		mΩ
$C_P$	coupling capacity	between shorted pins and back side metallization		160		pF


**Part number**

- M = MOSFET
- T = Trench
- I = Infineon Trench
- 145 = Current Rating [A]
- WX = 6-Pack with separated Phase Legs
- 100 = Reverse Voltage [V]
- GD = ISOPLUS-DIL

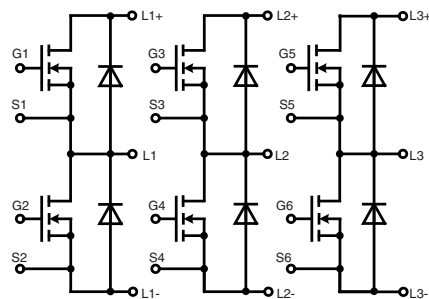
Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	MTI145WX100GD-SMD	MTI145WX100GD	Tube	13	518023

## Outlines ISOPLUS-DIL®



contact pin:

- galv. tin plating, per pin side: Sn 10...25 µm, undercoating Ni 0,2...1 µm
- stamping edges may be free of tin
- punching burr: ≤ 0,05mm



IXYS reserves the right to change limits, test conditions and dimensions.

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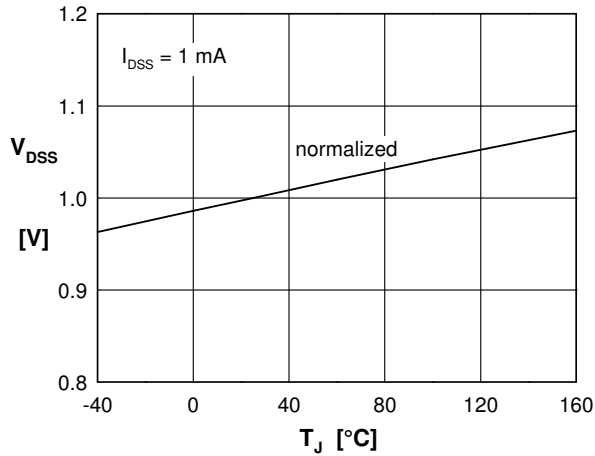


Fig. 1 Drain source breakdown voltage  $V_{DSS}$  vs. junction temperature  $T_{VJ}$

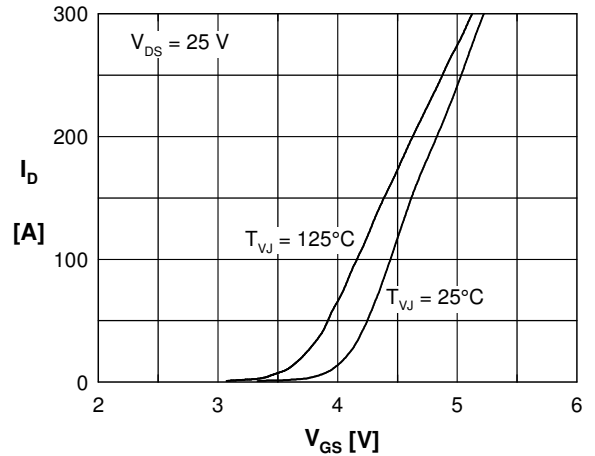


Fig. 2 Typ. transfer characteristics

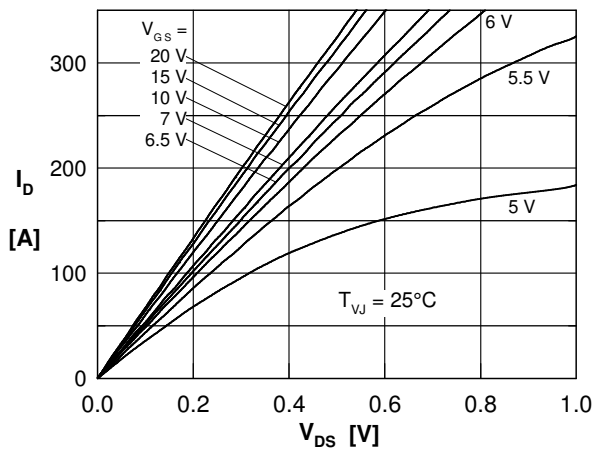


Fig. 3 Typ. output characteristics on die level

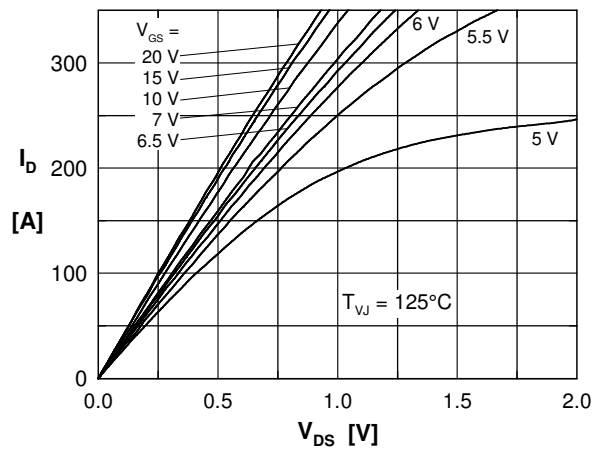


Fig. 4 Typ. output characteristics on die level

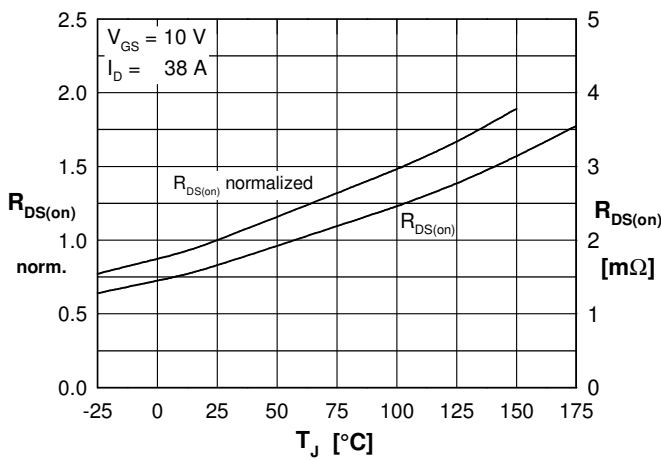


Fig. 5 Drain source on-state resistance  $R_{DS(on)}$  vs. junction temperature  $T_{VJ}$ , on die level

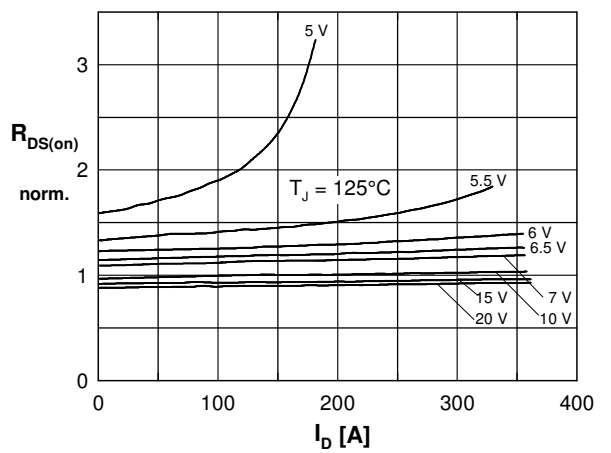


Fig. 6 Drain source on-state resistance  $R_{DS(on)}$  versus  $I_D$ , on die level

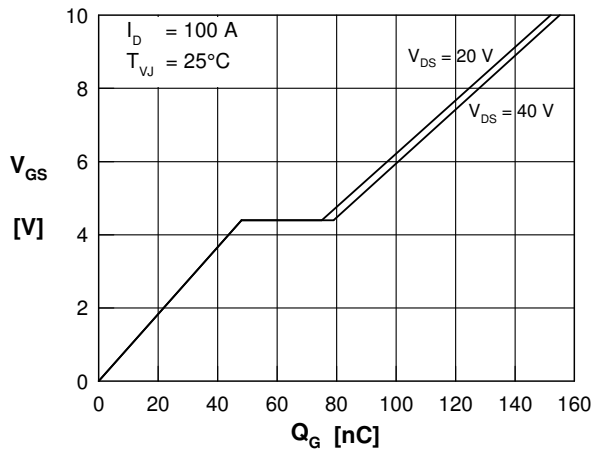


Fig. 7 Typical turn on gate charge

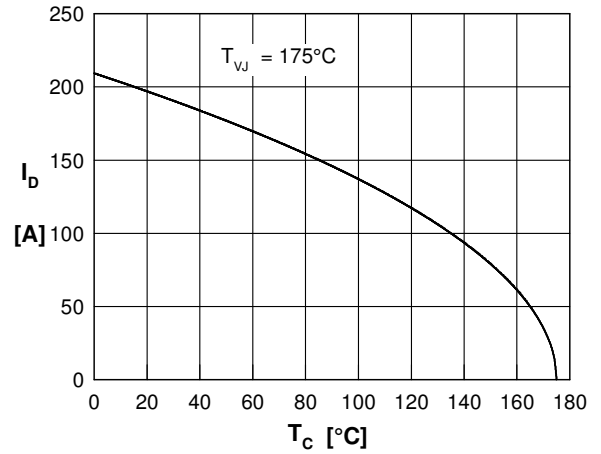


Fig. 8 Drain current  $I_D$  vs. case temperature  $T_C$  (Chip capability)

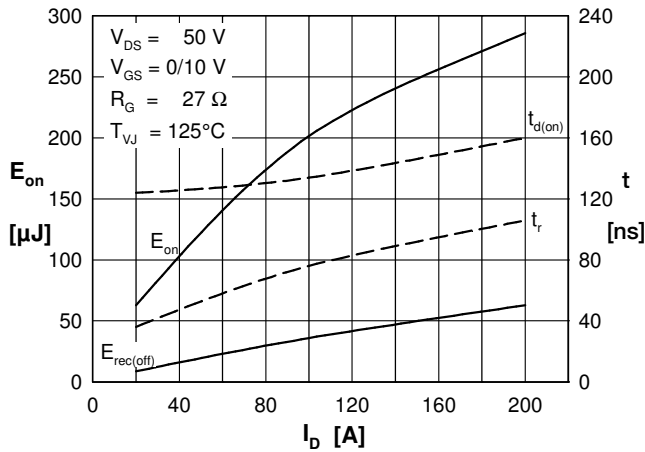


Fig. 9 Typ. turn-on energy and switching times versus drain current, inductive switching

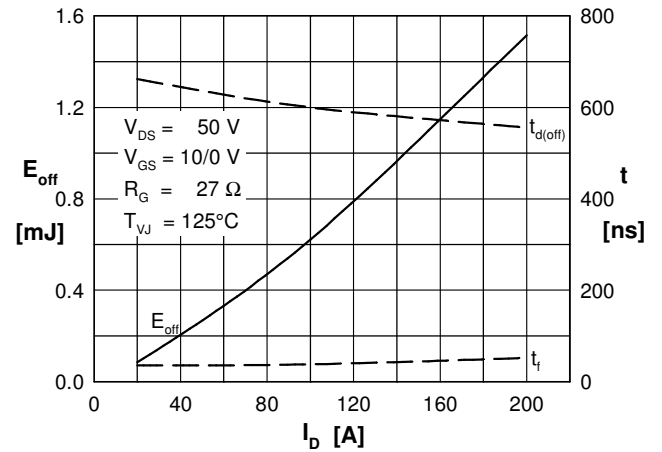


Fig. 10 Typ. turn-off energy and switching times versus drain-current, inductive switching

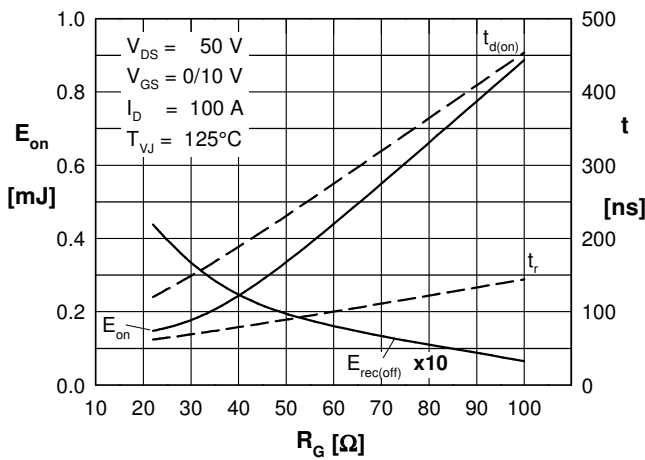


Fig. 11 Typ. turn-on energy and switching times versus gate resistor, inductive switching

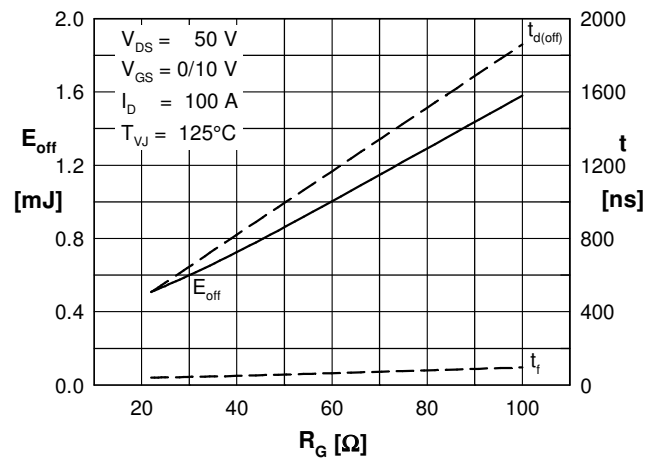
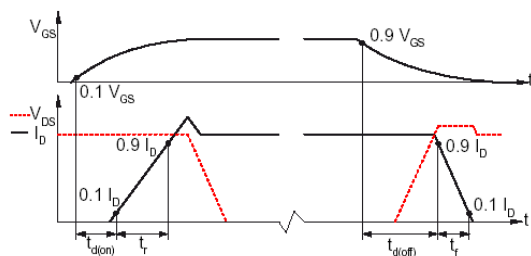
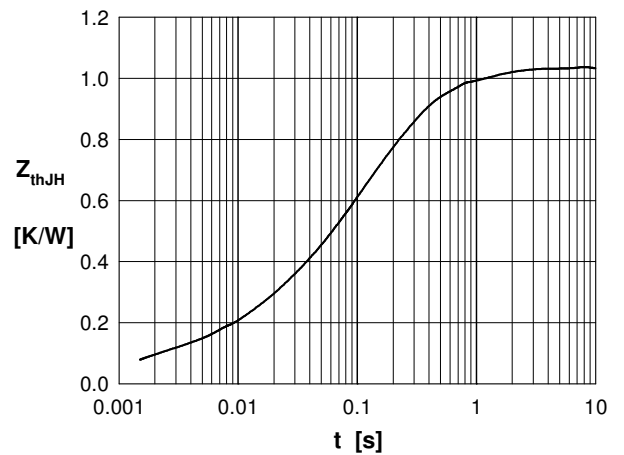
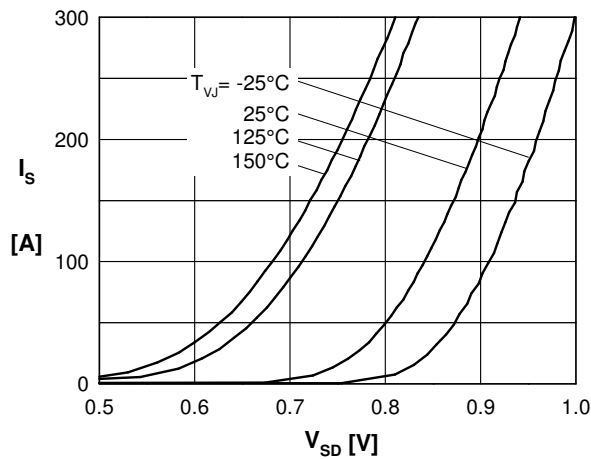
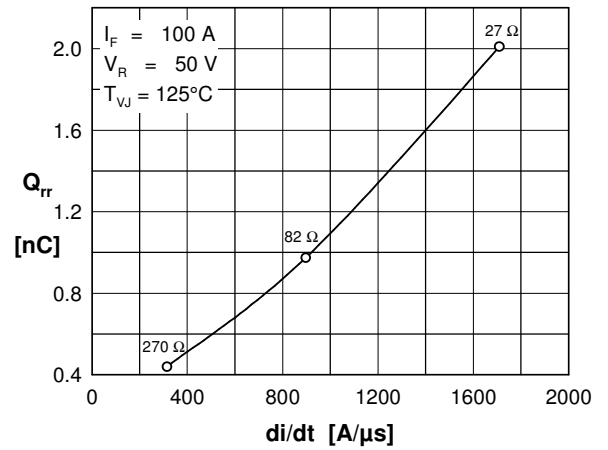
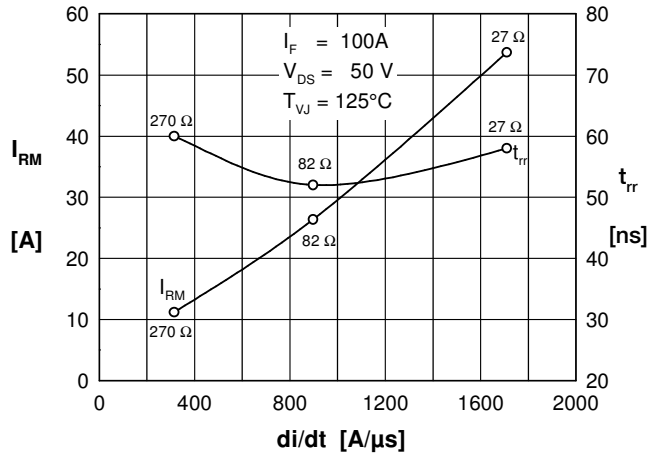


Fig. 12 Typ. turn-off energy and switching times versus gate resistor, inductive switching



Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
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- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
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- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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